Paper
TRADE JOURNAL

JUNE 15, 1951

CAN THE LIFE YOUR RUBBER ROLLS BE EXTENDED?
SEE PAGE 56

WHAT CAUSES FAILURE OF A PULP MILL DIGESTER?
SEE PAGE 57

WOOD PULP

G

Established 1886

"To see the world in a grain of sand
And a heaven in a wild flower
Hold infinity in the palm of your hand
And eternity in an hour."
BLAKE

This, in short, is the story of America—the vision and ingenuity to make possible the world's highest standard of living. In that progress the Pulp and Paper Industry has played an outstanding part.

GOTTESMAN & COMPANY
— INCORPORATED —
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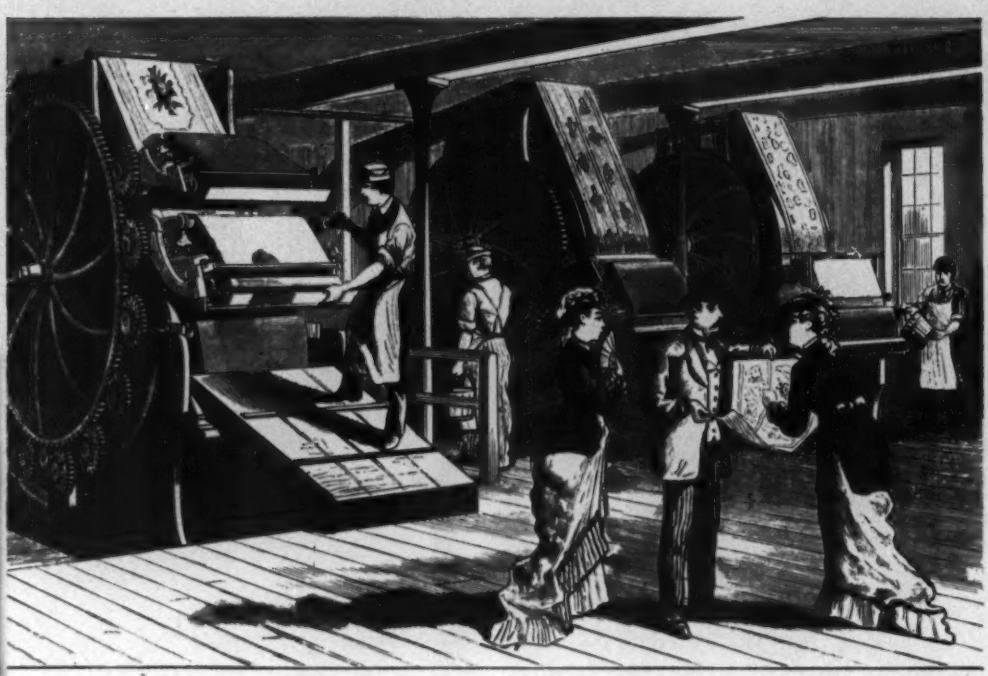


Illustration from the Bettmann Archive

Revolution in Wall Paper

First to make paper, the Chinese were also the first to make wall paper, hand painting small squares for decorating interiors. Dutch traders brought the idea to Europe, where designs were first applied by stencil. Late in the 17th Century Papillon in France introduced a process of printing paper squares and panels in elaborate design from engraved plates.

First made in the United States in 1750, wall paper continued to be produced in small sections by hand stencil and engraving. Then with the coming of volume paper production in the mid '60's the first machines were invented for printing wall paper in rolls.

Today modern high speed machines turn out millions of rolls of wall paper each year in infinite varieties of color and design. Through the enterprise of the pulp and paper industry and the resourcefulness of modern printing, the home decoration that was once the proud privilege of the rich has become available to every home in the land.

The dramatic story of paper is told in the sound-and-color film, "Paper — Pacemaker of Progress," and in a book under the same title. Both are presented by F. C. Huyck & Sons as a tribute to the Paper Industry. The book will be sent free upon request.

F. C. HUYCK & SONS • *Kenwood Mills* • RENSSELAER, N. Y.

HUYCK *Felts*

B. F. Goodrich steel-jacketed press rolls have 50% more cushion; outlast others up to 100%

No reduction in diameter when re-covered

YOU can get longer life from press rolls, more cushion for smoother service, and savings in re-coverings with B. F. Goodrich steel-jacketed press rolls:

Ordinary press rolls have a hard rubber base next to the cast iron core. Soft rubber is then put on this hard rubber. In spite of precautions, when hard rubber is vulcanized, blisters sometimes form between iron and rubber. As blisters grow larger they extend through the hard rubber base into the soft rubber, causing early failure of roll.

Steel jacket gives more cushion

B. F. Goodrich engineers studied this problem and developed steel-jacketed press rolls. The nonporous steel jacket replaces the hard rubber base, making cover *all soft rubber—all cushion.*

Rubber is "locked" to steel

This soft rubber is bonded to the steel by the B. F. Goodrich Vulcalock process—developed and patented by B. F. Goodrich. This adhesion (over 500 lbs. per square inch) is actually a "locking" of rubber to metal. Rubber is of same density clear to metal and all the way across face of roll. There are no strings used to carry off gas, which in ordinary rolls, leave markings on rubber surfaces.

Ordinary rolls, vulcanized under steam, get only 35 lbs. pressure. Vulcanization of B. F. Goodrich rolls is done by a special hydraulic process under 225 lbs. pressure. Gives better adhesion, makes cover more dense, tougher, rolls dry faster.

Can be re-covered indefinitely

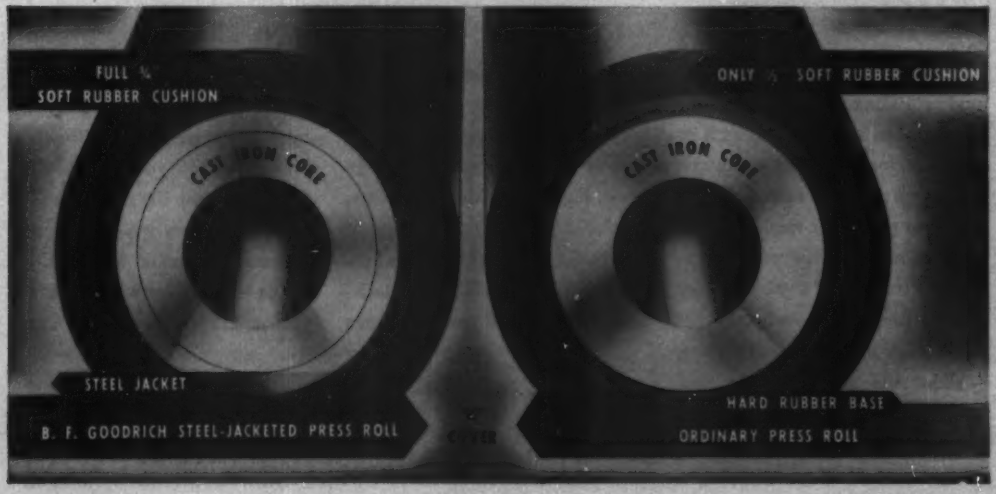
With ordinary rolls, core diameter decreases about ⅛" each time core is re-covered. But with B. F. Goodrich Vulcalock steel-jacketed rolls, cores can be re-covered without changing diameter. Steel core is not machined down and re-threaded each time. Old cores of ordinary rolls can be built up to any desired diameter by application of B. F. Goodrich steel jacket.

B. F. Goodrich engineers will be glad to send you full details or come to your plant to make recommendations. No obligation, of course. Write: *The B. F. Goodrich Company, Industrial and General Products Division, Akron, Ohio.*

Paper Mill Rolls BY

B.F.Goodrich

FIRST IN RUBBER



WHY FIDDLE WHILE PROFITS BURN?

The demand for paper passeth all understanding, and no hustle-and-hope system will catch up with it. Unfilled orders—even though you're up to your ears in 'em—beget no profits. It might be well —*now*—to count the cost in unrealized tonnage of any weak links in your production set-up.

A Moore & White sales engineer —slide rule at the ready and thinking cap adjusted—will tackle your problems with gusto and competence. He'll put the finger on equipment that is dawdling along, giving your nerves and ledger a daily shellacking. He'll specify the new, amazingly efficient, high-speed Moore & White machines you need to fully profit from today's sweet sales situation.

Recent Moore & White installations have gotten the slow-down bogey out of the hair of numerous paper manufacturers. May we take this opportunity of politely high-pressuring you to at least investigate what the new Moore & White machines will do for *you*? Procrastination is the thief of moola—something we'd like to see you making more of, and soon.

The MOORE & WHITE Company

15TH STREET AND LEHIGH AVENUE • PHILADELPHIA 32, PA.

CUSTOM-BUILT MACHINES FOR MAKERS OF PAPER AND PAPERBOARD

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ABC

Paper TRADE JOURNAL

ABP

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NEXT WEEK

"The Influence of Electrolytes on Pulp and Paper Properties" by W. C. Cohen, Gwenneth Farrant and A. J. Watson provides a considerable amount of valuable information on the effect of various inorganic salts in the water used for papermaking. This comprehensive subject is divided into two parts to be published in separate issues. Part I covers the effects of anions.

REMEMBER THESE DATES

JUNE 18-22: American Society for Testing Materials, Annual Meeting, Chalfonte-Haddon Hall, Atlantic City, N. J.

JUNE 22-23: The Paper and Twine Ass'n., Annual Meeting, Golf Tournament and Convention at French Lick Springs Hotel, French Lick, Ind.

JUNE 22-23: Maine-New Hampshire section of TAPPI, meeting to be held at the Eastern Slope Inn at North Conway, N. H.

JUNE 24-28: American Pulp & Paper Mill Supts. Ass'n. National Convention, to be held at the Multnomah Hotel, Portland, Oregon.

JUNE 27-30: Empire State TAPPI, meeting at the White Face Inn, Lake Placid, N. Y.

JULY 24: American Pulp & Paper Mill Superintendents Assn., Michigan Division, Annual Field and Sport Day, at the Kalamazoo Country Club, Kalamazoo, Mich.

SEPT. 6-8: American Pulp & Paper Mill Superintendents Assn., New York, Canadian Division, meeting at Saranac Inn, Saranac, N. Y.

SEPT. 16-19: American Institute of Chemical Engineers, Regional Meeting, French Lick, Ind.

OCT. 10-12: American Pulp & Paper Mill Superintendents Assn., Southern and Southeastern Div'n., George Washington Hotel, Jacksonville, Fla.

Oct. 29-31: National Foreign Trade Convention, Waldorf Astoria, New York City.

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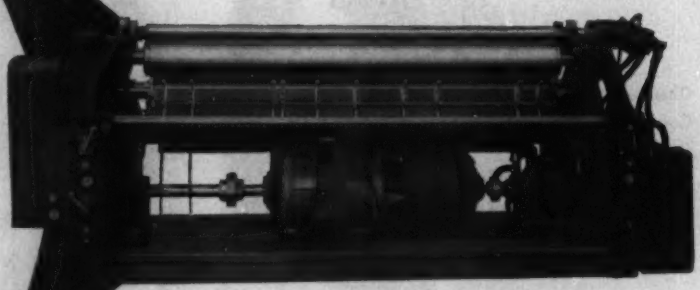
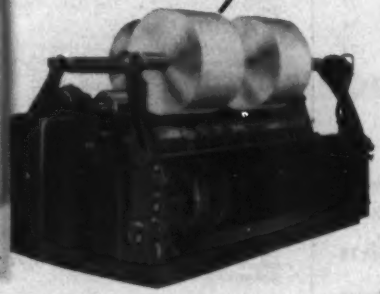
- Efficient and economical





The new B & S #15 Duplex Rewinder is powered by a Louis Allis Eddy Current Type Variable-speed Drive. A variable volume pump driven by an A. C. motor supplies power to the rewind shafts, and the winder is powered by the Eddy Clutch. By placing the entire drive beneath the machine, B & S designers have saved valuable floor space.

Accurate pressure control and precision winding are achieved by pneumatic cylinders for raising and lowering the rewind arms. For full center winding rewind shafts can be locked in "out" position.

To eliminate all possible vibration, the B & S Duplex Rewinder is mounted on heavy cast-iron bedplate. Fully enclosed piping and easily accessible controls assure smoothness and efficiency in operation, as well as ease and economy in upkeep.

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HERCULES' TECHNICAL RESEARCH in the rosin size field has once again resulted in an improved, amazingly simple, automatic emulsifying unit that merits the attention of paper manufacturers everywhere. This new automatic emulsifier is lower in price than the first Hercules automatic emulsifying unit introduced to the paper trade in 1948.

The original Hercules automatic emulsifying unit was the first in its field, and offered a completely new technique in handling and emulsifying paste rosin size.

Twenty paper mills have already installed this revolutionary rosin size emulsifying process, and additional units are scheduled for early installation. Write for details.

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VALUE in a fine product reflects the experience and skills of its makers.

VALUE in Fourdrinier wires is a matter of record... paper quality and production records in mills throughout America reflect the fact that *Appleton Wires are Good Wires!*

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Simonds runs one of the world's top tool steel mills — to get special steels that are consistently good enough for Simonds Cutting Tools.

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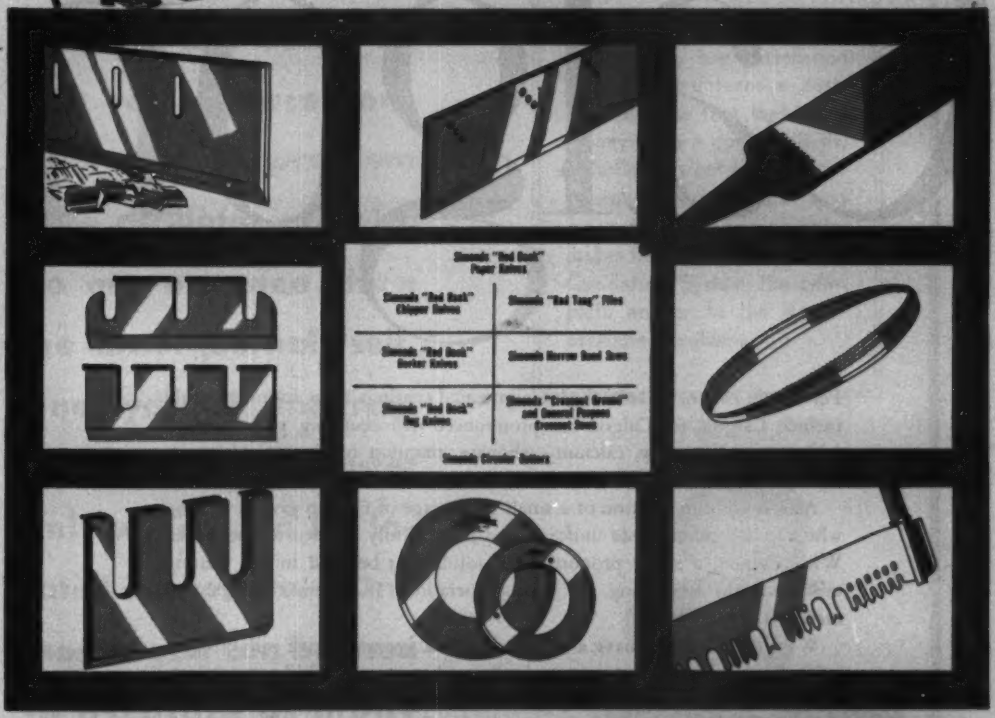
So rest assured that your cutting-tool dollar is *invested* — not spent — when you order Simonds from your dealer.



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For the Pulp & Paper Industry

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here's why Coating Formulas should include

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For starch, casein, or animal glue pigmented coatings, your formula should include Calgon, for Calgon has pronounced deflocculating properties on such materials as clay, calcium carbonate, titanium oxide and other pigments and fillers, and also exerts a dispersive action on the adhesive.

As a result, the addition of a small percentage of Calgon gives a coating which is smoother, more uniform, and more firmly bonded to the paper. With Calgon, a larger proportion of solids may be used in the coating mixture, thus facilitating the drying operation. In casein coatings, less casein is required.

We will be glad to have a Calgon technical representative call and give you full information. Just write and tell us when you would like to see him.

*T. M. Reg. U. S. Pat. Off.

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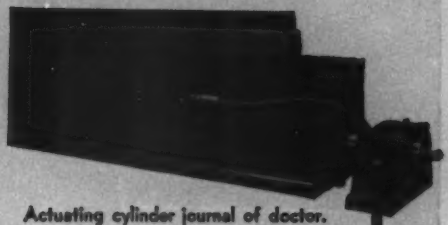
LODDING HYDRAULIC OSCILLATING SYSTEM—

universally applicable—oscillates any doctor on any roll. Space consideration no problem since oscillator occupies no more space than the doctor journal itself. One hydraulic line from each doctor to a master unit which can be located anywhere. One master unit can be used to oscillate as many as eight doctors.

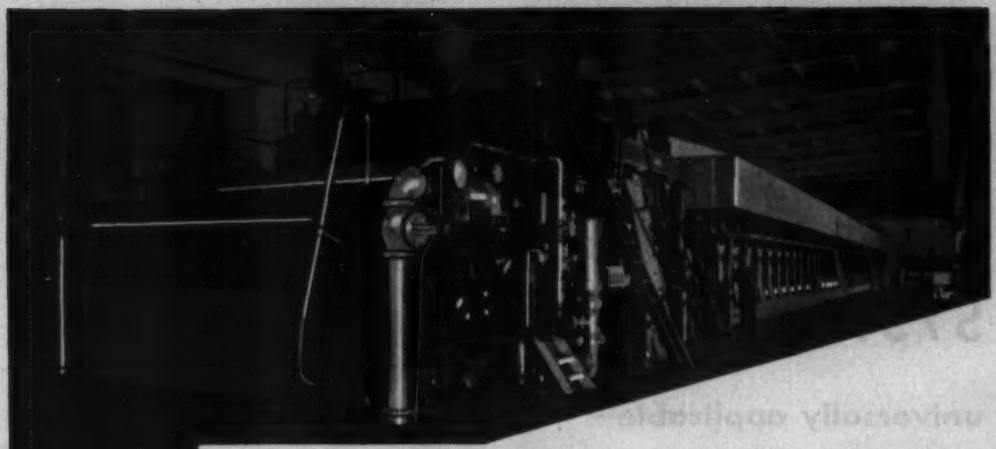


Actuating cylinder journal of doctor. Note small space requirement.

The Lodding system offers low initial cost, low installation cost, low maintenance cost. This, plus the fact that it will fit anywhere a doctor will fit, including a great many places where oscillation has long been thought impossible, makes the Lodding Hydraulic Oscillating System the complete answer to the doctor oscillating problem.

Master unit serving all doctors oscillated. No valves—no circulating system.

Lodding Engineering Corporation, Worcester, Mass.
Represented by W. E. Greene Corporation,
Woolworth Building, New York.



PULP FORMS PAPER FASTER AND FIRMER ON THIS

PUSEY & JONES CYLINDER MACHINE

Pusey & Jones are justifiably proud of their 168" Single Cylinder High Speed Felt Machine*. It reflects the latest developments in the paper-making art.

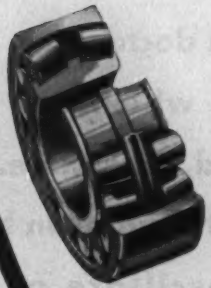
Its design features the Stream-Flow wet end with vacuum type cylinder mold, which permits superior formation at record-breaking new high speeds.

All dryers are equipped with SKF Spherical roller bearings, using the SKF rocker mounting construction on the front sides.

Pioneered by SKF, the Rocker Mount Design permits expansion and contraction of the dryers without lateral stresses on bearings or side frames.

Once again, in the paper-making industry, as in so many others, SKF blazed a trail toward more economical, efficient, reliable production—once again earns preference by all industry. 7245

*For information on this and other paper-making machinery, write Pusey & Jones Corp., Wilmington 99, Del.



8 REASONS WHY SKF IS PREFERRED BY ALL INDUSTRY

integrity
craftsmanship
metallurgy
tolerance control
surface finish
product uniformity
engineering service
field service

SKF

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save you money three ways!

1 Free Service:

When you specify Fast's you get Koppers' valuable free coupling service. If you need a special coupling, Koppers' experienced engineers in many cases can modify a standard Fast's coupling and save you money!

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Fast's still maintains its original design, without basic change or sacrifice in size or materials. This assures you freedom from needless, expensive coupling failures.

3 Foolproof Design:

Instead of perishable oil seals, Fast's couplings use a permanent metal-to-metal closure. Oil is always maintained at a safe level whether the Fast's is running or standing still.

The past 31 years prove Fast's Couplings earn savings three ways. *First*: Koppers' Engineering Service saves you money by making sure you get the right coupling for your application. *Second*: Because Fast's normally outlast the equipment they connect, you can divide their reasonable cost over 20 years or more to assure lowest coupling cost per year! *And Third*: Fast's Couplings save money by protecting paper mill drives against needless and costly coupling failures. Cases on record prove Fast's have been in continuous service in the paper field, 24 hours a day, 300 days a year for *29 and 30 years* without trouble.

For Jordan, floating shaft or standard applications, specify Fast's and save. To get detailed information, photographs and specifications, write today for your free copy of Fast's catalog.

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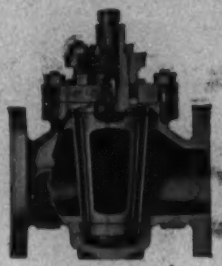

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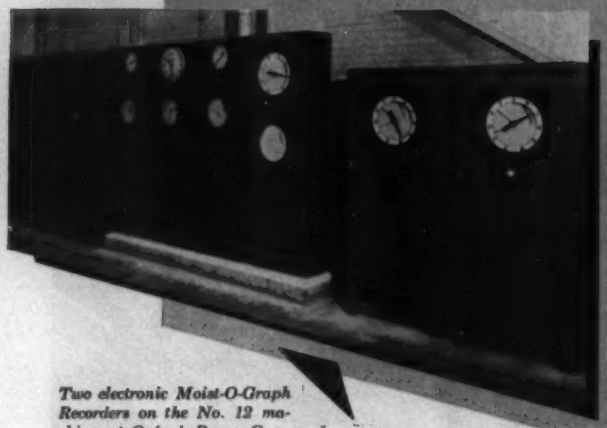
IMPROVE SHEET QUALITY CUT WEIGHT LOSSES...

in Papermaking and Converting



Two electronic Moist-O-Graph Recorders on the No. 12 machine at Oxford Paper Company, Rumford, Me.

What Correct Moisture Measurement Means to You

1. *Increased profits through reduced weight loss.*
2. *Increased profits through better coating and calendering.*
3. *Increased profits through fewer paper breaks.*
4. *Increased profits through ability to meet customers' demands for paper having correct moisture content.*
5. *Increased profits through better performance of converting operations.*

Whether you are making paper or board, or performing coating and other converting operations, correct sheet moisture content means increased quality—reduced weight loss—greater mill profits.

The Moist-O-Graph recorder supplies accurate reliable measurement of sheet moisture content at machine speeds up to 2000 ft. per min. Its effectiveness proved by operation in progressive mills such as the Oxford Paper Company, the instrument can be supplied with a five-way switch which permits instant changeover for various types of paper and board.

Any number of detectors can be used to measure moisture content at different locations throughout the machine as well as across the width of the web. By means of a cabinet-mounted selector switch, the machine tender can connect the instrument to any one of these detectors. Signal lights call attention to any moisture variations beyond desired limits.

For detailed information write for Data Sheet 2.9-5a or call your Honeywell engineer . . . he is as near as your phone.

MINNEAPOLIS - HONEYWELL REGULATOR CO., *Industrial Division*, 4510 Wayne Ave., Phila. 44, Pa. Offices in more than 80 principal cities of the United States, Canada and throughout the world.

MINNEAPOLIS Honeywell

BROWN INSTRUMENTS

The corrugated box, already the strong man of commerce, is made even stronger when Monsanto Santosite (sodium sulfite) is used in the semichemical pulping of materials that go into his tough hide and sinews.

Santosite delivers a lighter-colored pulp while increasing the yield. Pulp made with Santosite has a longer, stronger fiber because it is not subjected to severe cooking. With Santosite, mills need less shutdown time for cleaning up because of less liming of felts and screens.

Due to industry's great acceptance of Santosite for semichemical pulping and other usage, the product now is in short supply. If, as a possibility for sometime in the future, you are interested in the semichemical pulping of straw and other agricultural residues, write for information. MONSANTO CHEMICAL COMPANY, Organic Chemicals Division, 1700 South Second Street, St. Louis 4, Missouri.

Santosite Reg. U.S. Pat. Off.

EASY-TO-USE SANTOSITE is poured from the bag into the digestor. Santosite is clean... nontoxic and nonirritating.

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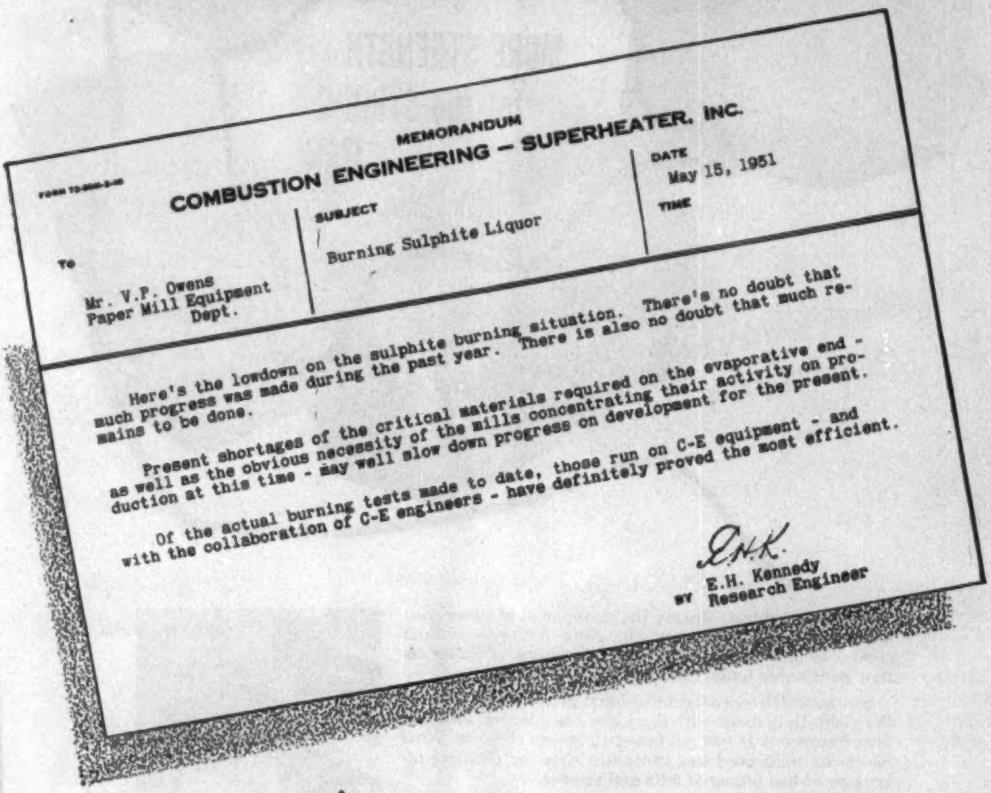
MONSANTO
CHEMICALS—PLASTICS

SERVING INDUSTRY . . . WHICH SERVES MANKIND

The present picture on burning Sulphite Liquor



MEMORANDUM

COMBUSTION ENGINEERING — SUPERHEATER, INC.

DATE: May 15, 1951

TIME:

SUBJECT: Burning Sulphite Liquor

To: Mr. V.P. Owens
Paper Mill Equipment
Dept.

Here's the lowdown on the sulphite burning situation. There's no doubt that much progress was made during the past year. There is also no doubt that much remains to be done.

Present shortages of the critical materials required on the evaporative end - as well as the obvious necessity of the mills concentrating their activity on production at this time - may well slow down progress on development for the present.

Of the actual burning tests made to date, those run on C-E equipment - and with the collaboration of C-E engineers - have definitely proved the most efficient.

E.H.K.

BY E.H. Kennedy
Research Engineer

As development in this field moves forward, Combustion Engineering-Superheater, Inc. will continue to lend its complete facilities of experience and technical "know-how" to assist the pulp and paper manufacturers in finding the real answer to this important problem.

C-E

COMBUSTION ENGINEERING — SUPERHEATER, INC.

200 Madison Avenue, New York 16, N. Y.

B-493

PRODUCTS FOR THE PAPER INDUSTRY INCLUDE RECOVERY UNITS, STEAM GENERATING, FUEL BURNING AND RELATED EQUIPMENT; ALSO PRESSURE VESSELS.

G-E ADJUSTABLE-SPEED DRIVE Corrects Boardmill Water Supply

In response to signal from flow meter, Thy-mo-trol control panel (on wall) increases or decreases pump motor speed as required.

Wide speed range of pump drive keeps water-conditioner flow in step with demand.

Helping keep boardmill water uniform is the vital job assigned to two G-E Thy-mo-trol* adjustable-speed drives in the San Joaquin Division plant of Fibreboard Products, Inc. at Antioch, Calif. These drives operate two chemical proportioning pumps which automatically inject a chemical conditioner into process water in direct proportion to the amount of water being used.

Here's the critical factor: The flow of chemical conditioner, so necessary to high quality stock, must be kept accurately proportionate to the flow of water. This calls for automatic *close* speed control of the proportioning pump drive over a wide range of 6 to 1. Thy-mo-trol drive meets this specification successfully!

Do *you* have a quality control problem, the solution to which is dependent on having the right kind of adjustable-speed drive? Best way to find out is to mail the coupon below. *General Electric Co., Schenectady 5, N. Y.*

WHICH DRIVES ARE BEST FOR YOU?

This 26-page manual will help you decide. It shows you how to go about selecting the *right* drive. The handy drive chart included is worth your detailed study. Bulletin GEA-5334. Check here..... ☐

General Electric Company, Section 646-14
Apparatus Department, Schenectady 5, N. Y.

Please send me the bulletins checked:
☐ for reference only
☐ for planning an immediate project

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COMPANY _____

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CITY _____ STATE _____

THE ACA MOTOR—*Speed ranges to 20:1*—An adjustable-speed a-c motor. Speed range 3:1 or 4:1 continuous; for intermittent operation from 6:1 to 20:1. Bulletin GEA-4883. Check here..... ☐

THE SPEED VARIATOR—*Speed ranges to 40:1*—An adjustable-voltage d-c drive that uses a-c power. Speed ranges 8:1 to 40:1 and beyond. Bulletin GEA-5335. Check here..... ☐

THY-MO-TROL*—*Speed ranges to 100:1*—The most accurate, most versatile, and fastest acting of all G-E adjustable-speed drives. Speed ranges of 100:1 or better. Bulletin GEA-5337. Check here..... ☐

ELECTRONIC SPEED VARIATOR—An electronically controlled version of the Speed Variator that offers most of the features of Thy-mo-trol for applications in the 15 to 60-hp range at moderate cost. Bulletin GEA-5336. Check here..... ☐

*Thy-mo-trol is the General Electric Company's registered trademark for its electronic motor-control system.

Headquarters for ELECTRICAL ADJUSTABLE-SPEED DRIVES

GENERAL ELECTRIC

PULP WOOD IS A SLOW-GROWING CROP!

Even under the most favorable conditions of soil and climate it takes a tree about as long to grow to pulp wood size as it takes a child to grow to man size. New crops of trees must be set out by hand or grow from self-planted seeds as fast as old forests are cut over.

On the other hand, conversion of pulp into paper or board is a fast operation. Felts must remove water at terrific speed. And that, Mr. Superintendent, is precisely what Hamilton Felts do.

MIAMI WOOLEN MILLS

Established 1858

Hamilton Felts

● From the thinnest tissue to the heaviest board there is a Hamilton Felt that will do your work better, faster and at lower cost.

SHULER & BENNINGHOFEN, HAMILTON, OHIO

1 The exclusive swing-rest mounting of the two grinding wheels is designed to eliminate the unavoidable inaccuracies which occur in grinding long rolls in a fixed-rest machine.

2 The patented crowning device produces an accurate crown, based on the true deflection curve. Easily and quickly set, it requires no manipulation or readjustment during operation.

THESE TWO FEATURES . . . assure highest accuracy in grinding Calender Rolls

When you use Farrel two-wheel, swing-rest roll grinders you can specify definite standards of accuracy and uniformity, and then insist that they be adhered to faithfully and reproduced on any number of rolls. This is possible because, in designing the machine, much of the skill formerly required by the operator, was transferred to the mechanism. The necessity for "cut-and-try" methods has been eliminated.

Well known throughout the paper industry for many years, the Farrel swing-rest machine has recently been redesigned to provide faster grinding and finer finishes, with even closer control of roll accuracy and crown shape.

The swing-rest principle and the patented crowning device, as well as the many other features of the Farrel two-wheel roll grinder, are described in detail in Bulletin No. 118. Send for your copy today. No cost or obligation.

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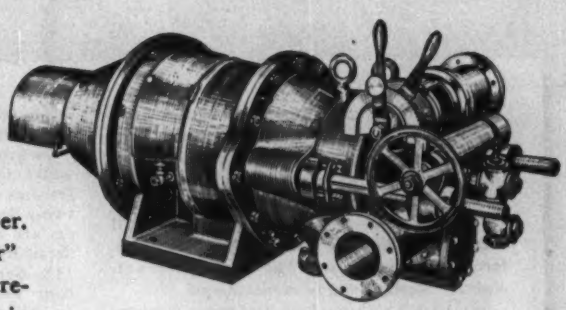
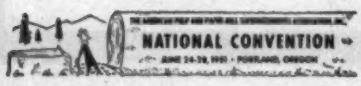
"...in nearly 500 installations around the world"

There are reasons why:

During the last 15 years, Morden "Stock-Makers" have proven themselves superior for continuous stock treatment on most every type of pulp and grade of paper. Investigate how the "Stock-Maker" can help you in supplementing or replacing present equipment to gain the ultimate in strength development, along with substantial savings in power, space and labor.



PLAN TO ATTEND



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● *"you name it...I helped make it!"*

Glue for antagonistic surfaces

I'm never perplexed very long. About glue! Even when laminating difficult and varied surfaces that *bristle* with resistance. Like acetate, lacquer and polyethylene-coated kraft. Or pliofilm, acetate and polyethylene sheeting. For advertising displays. And packages. Emulsion adhesives dry to a clean, colorless, transparent film. Eliminate inflammable solvents. Reduce drying time from days to several hours.

. . . and listen!

● *"you name it . . . I helped make it!"* Watch label adhesives at work. Protecting product identity by holding tight to cellophane, foil or paper labels. And to bottles that often reach labeling machines greasy, wet or hot. Filled with mineral oil, olives, salad dressing. The NATIONAL touch is everywhere. Glue applied through imaginative research and service. To every item of daily life.

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free folder offers useful information on starches and adhesives for the paper industry

Here's the folder that was so much in demand at the TAPPI-APPA show! A complete listing of National Starches and Adhesives for paper making . . . coating . . . converting. Every requirement you can think of, *plus* the latest developments to come out of our research laboratories!

Of certain interest to paper technicians are:

HYDROSEAL, a new beater additive that closely approximates the gelatinous substance formed by pulp hydration . . .

FLOKOTE, an unusually stable oxidized starch for coating operations . . .

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—and a number of quality dextrines and starches that are uniform in working properties, texture and color . . . a complete line of "fluidities" . . . acid and chlorinated conversions. Specialties for beater, tub and calender sizings, brush or machine coating and greaseproofing. Also, converting adhesives for laminating, combining, mounting, heading and wrapping. Special formulations including taping adhesives for corrugated boxes . . . heat seal adhesives . . . tube winding glues in cold-water swelling, cook-up and prepared form.

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Please send a copy of the new National Starch folder for the paper industry.

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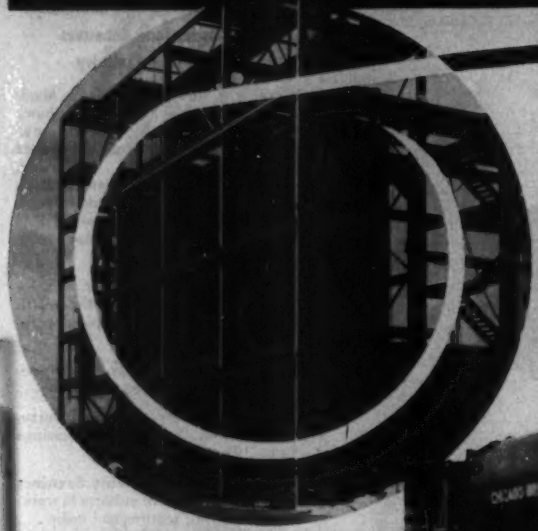
Hudson uses HORTON* digesters



4

in original installation

1947

5

more in

1950

expansion program

DURING 1950, the Hudson Pulp and Paper Company started to double the capacity of its mill at Palatka, Florida. Five 10-ft. diam. by 83 ft. Horton digesters are important capital equipment items in this $10,000,000 expansion.

Horton digesters are no strangers to the Palatka mill. When the mill was built in 1947, four were installed to provide a total digester capacity of 40 tons of pulp per blow.

This repeat installation is evidence that Chicago Bridge builds good structures for pulp mills.

Besides digesters, the Horton line includes chip tanks, blow tanks, elevated water tanks, and Marx Savealls for recovery of solids from waste white water. Some of the services we offer the paper industry are . . . x-raying, stress-relieving and welding to exact specifications . . . ability to handle corrosion-resistant materials . . . prompt service due to strategic location of our five plants. May we quote on *your* next job.

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Philadelphia, 3..1605-1700 Walnut Street Building
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Plants in BIRMINGHAM, CHICAGO, SALT LAKE CITY, and GREENVILLE

In Canada: HORTON STEEL WORKS, Limited, FORT ERIE, ONT.

Better Ride the Tide

Ever wonder why the rubber compounding tide is running so strongly to Naugatuck? That's because hundreds of companies are finding there's nothing quite like the product quality or the research and technical help they get from Naugatuck.

A few of the raft of Naugatuck-processed products are pictured here: Tape, rug underlay and backing, stationery, leather folders, shoe parts, woolens, cottons, conveyor belts, gloves, tire cords, rubber toys. *We cover the waterfront on water-based latices.* For new product improvement or compounds, write to address below.

Latex Natural and Synthetic.

Kraton® Plastic Latices.

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Naugatex® Dispersed Chemical Compounding Ingredients for all Latices.

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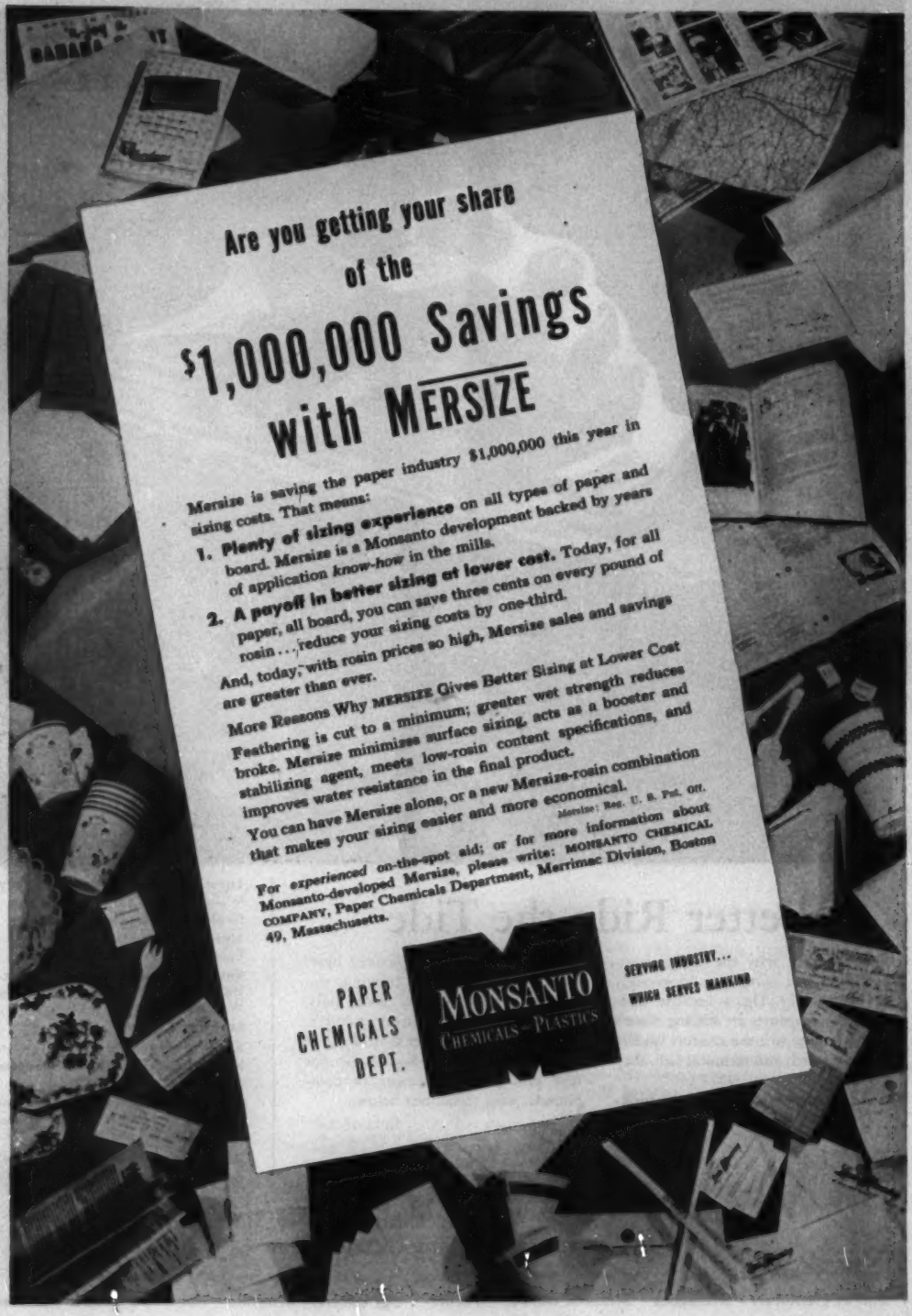
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of the
$1,000,000 Savings
with MERSIZE
Mersize is saving the paper industry $1,000,000 this year in sizing costs. That means:
1. Plenty of sizing experience on all types of paper and board. Mersize is a Monsanto development backed by years of application know-how in the mills.
2. A payoff in better sizing at lower cost. Today, for all paper, all board, you can save three cents on every pound of rosin . . . reduce your sizing costs by one-third.
And, today, with rosin prices so high, Mersize sales and savings are greater than ever.
More Reasons Why MERSIZE Gives Better Sizing at Lower Cost
Feathering is cut to a minimum; greater wet strength reduces broke. Mersize minimizes surface sizing, acts as a booster and stabilizing agent, meets low-rosin content specifications, and improves water resistance in the final product.
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TIMELY HELP FROM TITANOX RESEARCH

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More Printing Area

PER TON OF PAPER

A practical way to utilize paper-making materials more effectively is through lighter weight paper—pigmented with TITANOX. Thousands of extra square feet of printing surface can thus be added to every ton of paper and at the same time brightness and opacity maintained.

Titanox research has developed titanium dioxide pigments specially suited for whitening, brightening and opacifying paper. Definite recommendations have been established for their best application.

In coatings, the pure anatase titanium dioxide pigment TITANOX-A, or the rutile-calcium pigment TITANOX-RCHT is preferred. TITANOX-A is also specially recommended for addition to the beater. Fine and optimum particle size, common to each of these pigments, insures easy mixing and complete dispersion for uniform whiteness, brightness and opacity in light weight paper.

Our Technical Service Department is always available to help you realize the most from your supply of TITANOX pigments. Titanium Pigment Corporation, 111 Broadway, New York 6, N. Y.; Boston 6; Chicago 3; Cleveland 15; Los Angeles 22; Philadelphia 3; Pittsburgh 12; Portland 9, Ore.; San Francisco 7. In Canada: Canadian Titanium Pigments, Ltd., Montreal 2; Toronto 1.

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TITANOX

the brightest name in pigments

TITANIUM PIGMENT CORPORATION

Subsidiary of NATIONAL LEAD COMPANY

100 Years of Service

100 YEARS is a *large* sector of time. Back in 1851, when Charles Morningstar, grandfather of Joseph Morningstar, present head of Morningstar, Nicol, Inc., founded the company, the California Gold Rush was at its height; Millard Fillmore was President of the United States, Daniel Webster was Secretary of State. Henry Clay's effort toward the admission of New Mexico and Utah as Territories had just succeeded. From a humble beginning, so long ago, the Morningstar Company has grown until it now has operations in 20 states. Especially rapid progress and expansion has occurred during the past decade. In addition to the plants and sales activities listed on this page, Morningstar, Nicol, Inc. also imports Tapioca Flour from Brazil, Arrowroot from the West Indies, as well as Starches and tropical Gums. You will find us keenly alert to every opportunity to render a valuable service to all industries.

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The extensive, highly efficient facilities of the following plants and laboratories are at your service.

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630 WEST 51st STREET, NEW YORK 19, NEW YORK
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Industry looks to Powell

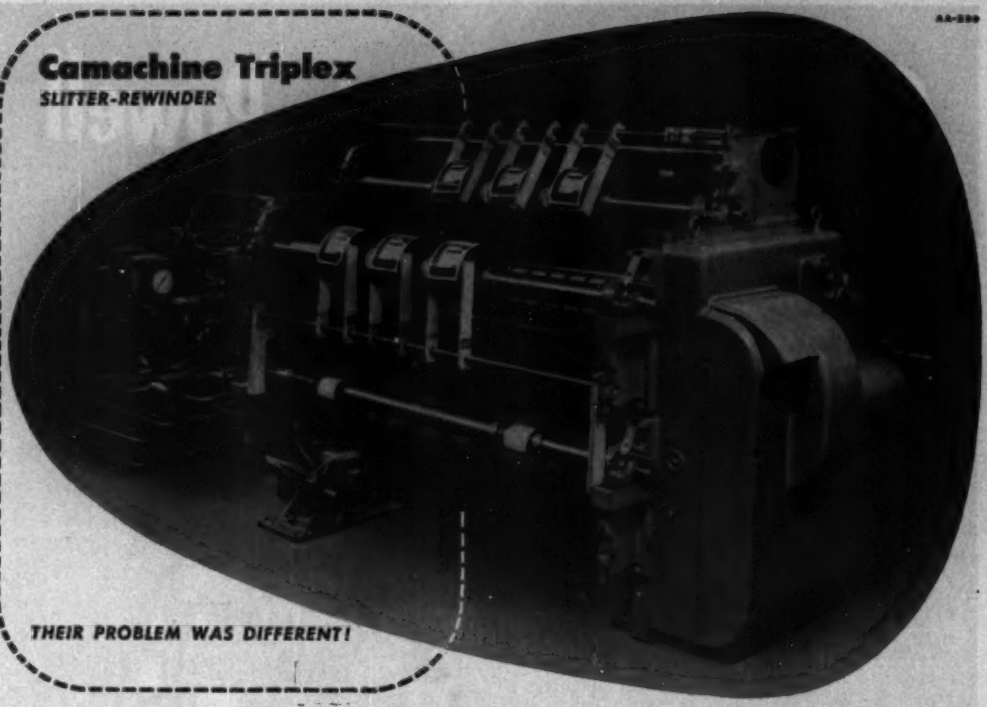
Small size flanged end O. S. & Y. Globe Valve for 150 pounds W.P. Available in various corrosion-resistant metals and alloys, with Stainless Steel bolts and nuts. These valves conform to all latest standards. Also available with screwed ends.

POWELL

The WM. POWELL CO., 2525 Spring Grove Ave., P. O. Box 106, Station B, Cincinnati 22, Ohio

AA-230

Camachine Triplex
SLITTER-REWINDER



THEIR PROBLEM WAS DIFFERENT!

when you must depend on experience . . .

A large producer of acetate film ordered a battery of high-speed slitter-rewinders to use in processing their product. Characteristics of the material called for highly sensitive web tension control throughout the slitting and rewinding operation, and for razor-clean slitting. Provision had to be made for producing rolls of uniform density regardless of variations in the caliper of the material. Since core heat would ruin the inner laps of the rewound rolls it was necessary to minimize heat generated by friction between core and rewind shaft. Other requisites included: positive roll separation; trim rewind for salvage; 15" diameter rewind and speed of 800 feet per minute. And no complicated gadgets – the machines had to be designed for economy, simplicity, durability and low-cost maintenance.

. . . you can depend on Camachines®

The new Camachine Triplex slitter-rewinder was specifically developed to meet the requirements outlined above. The Triplex is a *new* machine, designed to meet a *new* set of operating conditions, and featuring several *new* principles in slitter-rewinder engineering. The Triplex is *new*, yes, but its design is deeply rooted in Cameron Machine Company's sixty years of specialization and leadership in the manufacture of roll production equipment. The new Triplex has proved again that when you have to depend on experience you can depend on Camachines!

For complete information write to:

Cameron Machine Company · 61 Poplar Street · Brooklyn 2, N. Y.

pays off

In cooperation with far-sighted mill management, Sutherland has opened a new era in wood conservation, lower operating costs, and higher profits.

SUTHERLAND
High Yield Sulphate System
patent pending

This system, an outstanding result of collaboration between engineering and management, is a major step in our industrial progress.

SUTHERLAND

continuous beating systems

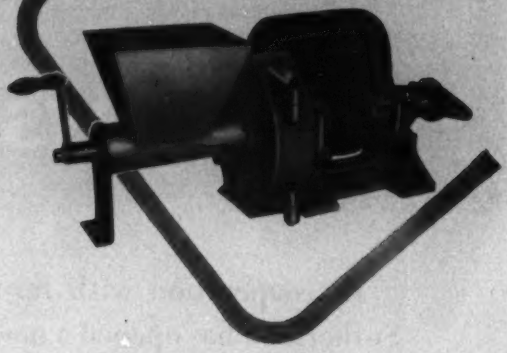
Designed, Engineered, Serviced

by SUTHERLAND REFINER CORPORATION

TRENTON 8, N. J.

for low cost, experimental

PULPING and FIBER studies

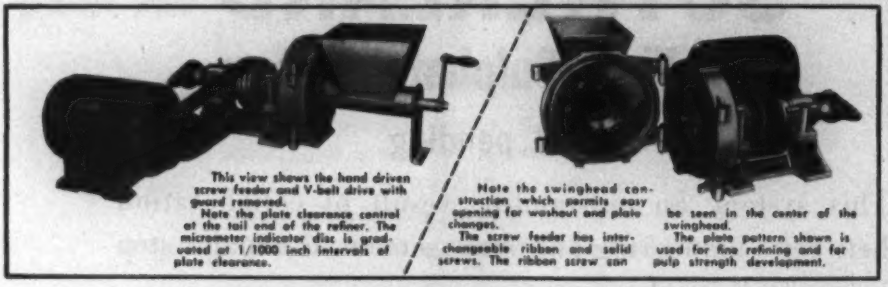


Now . . . you can get "controlled tests" in pulping raw, steamed, or semi-chemically cooked chips, fully cooked pulp, waste papers, straw pulp, Asplund fiber . . .

You can improve on your present pulping and fiber studies . . . and explore new possibilities . . . with the Sprout-Waldron "Lab" Refiner.

Designed for semi-plant-scale defiberizing, pulverizing, decorticating, blending, granulating and other specialized uses—on dry or fluid feed, hot or cold, high consistency or low—the Sprout-Waldron "Lab" Refiner combines simplicity of design and efficiency, with low initial and operating cost. Plate styles for a wide range of applications are available.

SPROUT-WALDRON 12" LABORATORY REFINER



This view shows the hand driven screw feeder and V-belt drive with guard removed.
Note the plate clearance control at the tail end of the refiner. The micrometer indicator disc is graduated at 1/1000 inch intervals of plate clearance.

Note the swinghead construction which permits easy opening for washout and plate changes.
The screw feeder has interchangeable ribbon and solid screws. The ribbon screw can be seen in the center of the swinghead.
The plate pattern shown is used for fine refining and for pulp strength development.

Available with stainless steel construction

In daily use in many laboratories, both private and governmental, domestic and foreign.

Today . . . send for Bulletin 17 which describes this useful basic tool for laboratory and pilot-plant use. Complete specifications are included. Write to Sprout, Waldron & Co., Inc., 59 Waldron St., Muncy, Pa.

SPROUT WALDRON SW SINCE 1866

Sprout-Waldron
Manufacturing Engineers
MUNCY • PENNSYLVANIA

1880

These Shake Motions give you Rugged Dependability

A Few Other Manchester Products

DRUM WINDERS • POPE TYPE REELS • SIZE PRESSES • RUBBER-COVERED DRILLED SUCTION DRUM ROLLS • DRILLED SUCTION COUCH ROLLS • CALENDER DRIVES • PAPER MACHINE DRIVES CYLINDER MOULDS • COMPLETE FOURDRINIER • ROLL GRINDING

THE MANCHESTER MACHINE COMPANY

1908 CENTRAL AVE. • MIDDLETOWN, OHIO

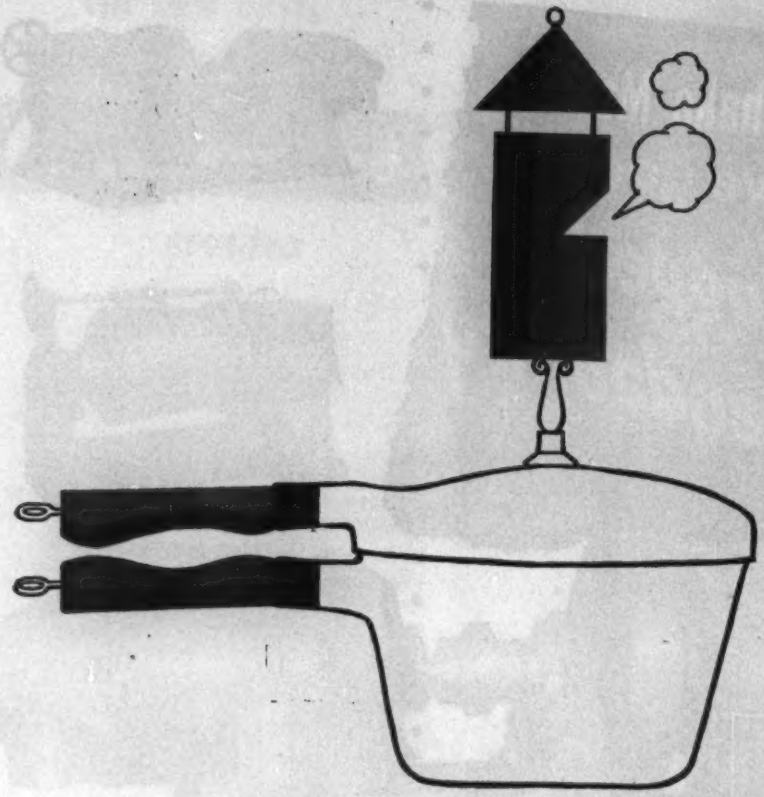
SPECIALISTS IN PAPER MILL MACHINERY AND COMPLETE REPAIR SERVICE

You can see for yourself here the efficient design and rugged construction of the Manchester Shake Motion.

Note these special features, each carefully engineered for low operating and maintenance costs:

1. Stroke adjustable from zero to maximum while shake is running.
2. No clutches or pulleys to come loose.
3. All moving parts completely enclosed and run in oil.
4. Supplied with vee belt cone pulley or direct drive—in any size or capacity to meet your needs.

Write for complete information about the Manchester Shake Motion; and ask for a copy of our useful new catalog.



Wyandotte Caustic cooks stronger strawboard

This story is about a strawboard manufacturer who wasn't satisfied. The company had been cooking their straw with a 10 to 12% concentration of lime. But was there a better way? They wanted to know . . . and so they got in touch with Wyandotte's Technical Service.

We made suggestions and they started to run some tests. The second test was a success. A combination of 4% caustic soda and 2% lime created a strawboard that was *one-third stronger*.

But that was just the beginning. Wyandotte's Technical Service recommended liquid caustic, drew up plans for handling, storage and dilution, and was on hand when the first tank car was unloaded. That's Wyandotte's Technical Service for you — and it *is* for *you*.

SODA ASH • CAUSTIC SODA • BICARBONATE OF SODA
CALCIUM CARBONATE • CALCIUM CHLORIDE • CHLORINE
HYDROGEN • DRY ICE • SYNTHETIC DETERGENTS • GLYCOLS
CARBOSE (Sodium CMC) • ETHYLENE DICHLORIDE • PROPYLENE
DICHLORIDE • AROMATIC SULFONIC ACID DERIVATIVES
OTHER ORGANIC AND INORGANIC CHEMICALS

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Wyandotte, Michigan • Offices in Principal Cities

Wyandotte
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A ...ement OF THE WEYERHAEUSER OPERATING POLICIES

The Weyerhaeuser Timber Company is committed to the policy of operating its properties so that they will provide continuous and profitable employment for its workmen . . . and furnish uninterrupted supplies of forest products to the consuming public.

In brief, the basic policies which guide our forestry and mill management practices emphasize, first, recurrent forest yield by tree farming . . . which provides for the growing, protecting and harvesting of trees; secondly, whole crop utilization by grouping different kinds of mills on one mill site . . . which will permit processing all of every log at the mill for maximum use and dollar value.

Augmented by long range research and development programs, these practices will help establish a permanent forest industry . . . the continuous operation of our mills providing greater job security, a reasonable and necessary investment return, and achieving the ultimate objective of assuring quality forest products for use by our customers.

WEYERHAEUSER

SCORING OF DRIER ROLL BEARINGS ELIMINATED BY SUNVIS H.D. 740 OIL

Lubricants in the bearings of high-speed paper-mill driers are subjected to heavy loads, destructive temperatures, and considerable contamination. Most oils will break down in continued operation under such conditions. When they do, bearings become scored. That happened in one of the world's largest paper-making mills, as disclosed in a routine inspection of drier roll bearings lubricated for 24 months with a supposedly adequate oil.

The mill requested the cooperation of the machine and bearing manufacturers in finding an oil that would eliminate such trouble in the future. As a result, many different oils were compared on various extreme-pressure testing machines. Sunvis H.D. 700 Oils, and one other, proved to be the best by far, among all those tested. A Sun oil was chosen because of the company's reputation for service.

In actual operation the oil chosen, Sunvis H.D. 740, has well justified its selection. Since its use, bearing race scoring and the threat of bearing failures have been minimized. It has also minimized the danger from the unavoidably continuous contamination. The mill's engineers recently demonstrated their satisfaction by specifying Sunvis H.D. 740 Oil for a new machine—*one that will be among the fastest producers in the world.*

YOUR PAPER-MAKING MACHINES

will operate better if you lubricate the circulating systems with Sunvis H.D. 700 Oils. They maintain an unbroken lubricating film under heavy pressures and at high temperatures, thus preventing scoring in drier roll anti-friction bearing races. Sunvis H.D. 700 Oils are unsurpassed for protection against rust and corrosion. And their exceptional stability permits them to be used for years without replacement. For complete information, call or write the nearest Sun Office.

SUN INDUSTRIAL PRODUCTS

SUN OIL COMPANY, PHILA. 3, PA. • SUN OIL COMPANY, LTD., TORONTO & MONTREAL

SUNOCO

Paper TRADE JOURNAL

TRENDS

Office of the Paper Trade Journal, Wednesday, June 13, 1951.

"It May Never Happen"

If dates mean anything to OPS—and it has happened now and again—then Friday, the 15th, will see the release of the woodpulp pricing order and its companion set-aside regulation, scheduled for that date.

Both will become effective July 1 and will initiate a new era of supply for paper mills which must rely on set-aside tonnages from integrated producers for much of their pulps. Swedish tonnages now on reservation for these consumers will probably be lost to this market for the next quarter, at least, because of high costs.

There is much rumor and more apprehension about the actual workings of the order, it must be reported, despite the best-laid plans of Industry Advisory Committees and the Office of Price Stabilization. It is harder for the non-integrated mills to see that "the Lord will provide a ram" than that they will become the "burnt-offering."

"Don't worry. It may never happen," is the timely advice of the June calendar of the Kalamazoo Vegetable Parchment Co.

Waste Paper Supply

From the standpoint of collections, old corrugated containers are weakest. Pricewise they show further strength with a new rise of $8 a ton by a major consumer, which for New York is $59/68 and just below the general ceiling price of $64/70.

Philadelphia reports the market range at $58/63, while the *Journal's* GCPR level for that market stands at $55/62.

A word of explanation is necessary at this point regarding these January 25 ceilings. *Paper Trade Journal's* record covers the full range as it could be determined through its many contacts. Until OPS sets tailored ceilings, however, it is well-nigh impossible for anyone to know every dealer's ceiling.

To judge by prices now heard, it must be concluded that either the January 25 record has been incomplete or the ceilings are sensitive to spot demand.

Spot Prices Reported

In the case of the Philadelphia market, it is noted that our January 25 record was on the low side, since this market and New York vary little in price. Double-kraft lined corrugated cuts at $115/120 for New York, and $120/140 in Boston, and $120 for Chicago, were quoted as $105/110 for Philadelphia as of January 25. Price quoted for June 7 is $120/130.

Similar reasoning might explain other variations in Philadelphia prices; we do not know. Reported are the following levels:

100% Kraft corrugated cuts $150/160; used kraft bags $85/95; No. 1 kraft $95/110; super resorted $100/115; new brown kraft cuts $135/145; colored tab cards $120/130; manila tab cards $165/190; mixed ledger $100/110; white ledger $130/140.

Spot prices reported in New York are $100/105 for mixed ledger, and $135/145 for white ledgers. Tabulating cards are specially strong, and it is difficult to report so-called ceiling prices.

As the season for mill inventory-taking and holiday closings nears, the Eastern Conservation Committee presses for more salvage of container and high grades particularly. Suggested by Director Colley S. Baker is that the paper mills themselves undertake to persuade their converters and consumers to the importance of salvaging high-grade paperstocks.

The Midwest Consumers group also has started up its drives to interest local groups in salvage operations.

Materials

A slight easing in demand for chemicals, coating materials and other supplies is noted quite generally by distributors. To most observers, it comes from a letup in the rate of stockpiling, rather than from a diminution in consumption. It is a temporary condition which may alter radically when the mills reopen after vacations.

Casein.—Buying is light. Mills are reported to be well-stocked and not interested in further buying. The Argentine flush season is over and stocks are not heavy. Price of this material has dropped ¼ cents to 40 cents f.o.b. shipping point. Offers of French, Swiss, Portuguese and Danish are well below the Argentine price but evoke little interest. Domestic season is at flush but easing of price is only spotty.

Potato Starch.—Buying reported as light. Supplies of both Idaho and Maine product ample. Maine price ceiling raised ¼ cent to 5¾ cents.

Talc.—Supply good. Stocks readily available.

Rosin.—Trading in gum rosin at Savannah is reported as fairly active at the domestic level and good, to brisk, on export. England and Germany have bought heavily, the U.S. Dept. of Agriculture states.

Monthly summary for May, as reported by USDA, indicates that at the domestic level K grades and above averaged 7 to 26 cents higher, while at the export level, K was 5 cents higher. Domestic trading was most active on N and M in drums and K in bags. Export was good on K and WG. As the month closed, market tone was described as steady to firm with a generally active foreign interest apparent. CCC sales during the month totaled 12,897 drums of mostly N and M, leaving 87,692 drums available for domestic sale.

Absence of a sound price structure has the Naval Stores industry at a serious disadvantage, Savannah reports. The market is functioning on a day-to-day basis while it waits for OPS decision on a ceiling price.

The American Turpentine Farmers Association has urged OPS to apply ceilings which would permit the producer a $40 barrel gum price in order that he may compete with other industries for labor. Temporary ceilings are said to be in the offing, and it is hoped they will not be lower than 125 percent of parity.

Rosin Outlook, 1951-52

Outlook for the 1951-52 season's rosin supply, as taken from Official Statistics for 1950-51 Crop Year of USDA, should be about 2,900,000 drums or about 15 percent less than 1950-51. Output of tall oil is estimated at 2,600,000 drums.

"With every expectation of continued strong demand for rosins and turpentine, the prices of these commodities, as well as crude gum, should average appreciably higher than during 1950-51 season," the report stated. "Estimate on the average price of crude gum during 1951-52 is at least $10 per barrel more than the average for the previous year."

Overall rosin output during the 1950-51 year was 2,137,000 drums, the greatest on record. Share of gum in this production was about 37 percent, compared with 46 percent in 1948.

—E.P.N.

Rosin Export

WASHINGTON — Norwegian paper makers' preference for American rosin and other naval stores may result in continued demand for this country's products despite recent trade agreements which seemingly will insure supplies from Spain and Portugal in 1951.

This view is reported by American official sources which say if this industry continues to avoid use of Spanish rosin, from 1,000 to 1,500 tons of its annual requirements totaling 4,000 to 4,500 tons, as well as a considerable proportion of Norway's emergency stocks, are expected to be imported from the United States.

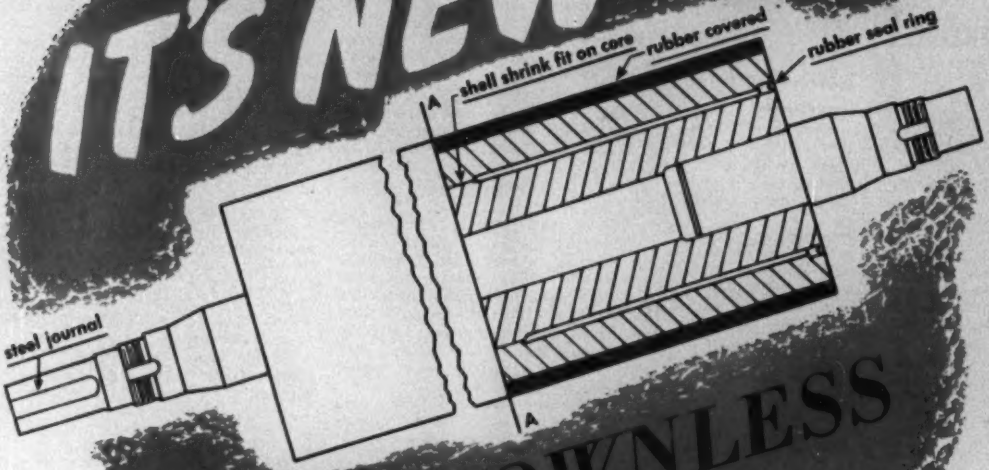
The price differential which formerly favored this country's rosin has been virtually eliminated by recent increases, the trade reports. However, consuming industries are said to be planning to continue to import U.S. rosin to the limit of their dollar exchange because of higher quality and better packaging of the U.S. product.

Paperboard Production (Tons)*

	June 2 1951	May 26 1951	June 3 1950	Month of May
Production	243,835	244,937	193,563	1,251,633
New Orders	266,566	209,194	254,251	1,264,120
Unfilled Orders	638,722	638,760	395,483	638,722

* Source: NPA

IT'S NEW



a CROWNLESS press roll

The necessity of crowning press rolls correctly—varying the crown as sheet weight changes—has cost labor and money since time immemorial.

Greater benefits are realized by minimizing down time as well as eliminating crowning press rolls—a recent and exclusive Black-Clawson development.

For instance, paper and board requiring various degrees of press loading can be run thru these special rolls with uniform pressure applied across the entire width of the sheet—and no crown changing.

Advantages are impressive

Uniform nip pressure for any loading within limits for which roll is designed.

Time loss avoided for removing, grinding, and replacing rolls to change crowns.

Skewing of felts from center to edges which tends to close the weave and injure the felt eliminated. Nor will the centers run ahead of the edges.

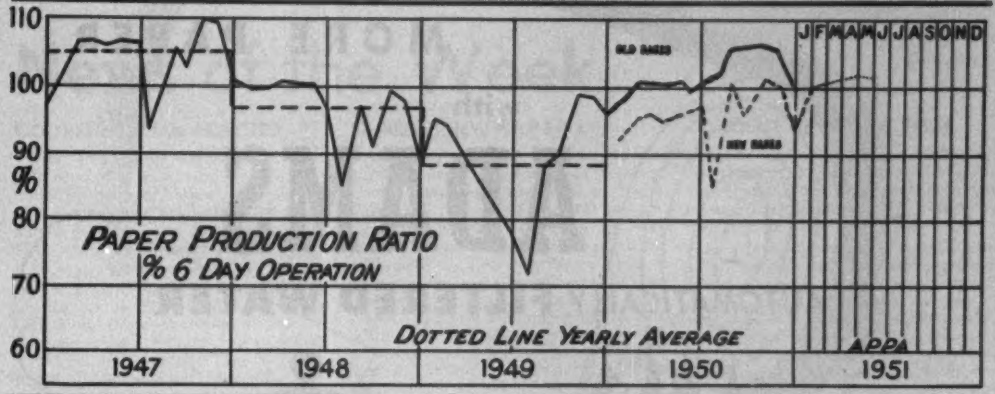
Here is something you'll want once you have all the facts. Study the above drawing —refer to May Messenger for detailed explanation—or write.

BLACK-CLAWSON

HAMILTON, OHIO

Divisions: SHARTLE BROS. MACHINE CO., Middletown, Ohio
DILTS MACHINE WORKS, Fulton, New York
Western Sales Office: Mayer Bldg., Portland, Oregon
Southern Sales Office: 937 Coventry Road, Decatur, Ga.
Associate: THE ALEXANDER FLECK LIMITED, Ottawa, Canada
Subsidiary: B-C INTERNATIONAL, LTD., Greener House
66/68 Haymarket, London, S. W. 1, England

OUR BUSINESS



Weekly Brief of Important Figures

Source	Production	WEEK ENDING June 2, '51	May 5, '51	June 3, '50
APPA	Paper Production Percent Capacity[a]	100.2	102.7	92.6
	Unbl. Kraft Paper Production Percent	103.3	96.5	95.8
NPA	Paperboard Operating Ratio Percent Inch Hours	100	107	83
		Apr. 1951	**Mar. 1951x**	**Apr. 1950**
APPA	Paper Production[a] (Except Newsprint and Building Papers) ...Tons	831,500	911,574	774,000
	New Orders ...Tons	857,000	959,757	779,500
	Unfilled Orders ...Tons	964,636	932,996	543,100
	Shipments ...Tons	824,000	911,448	768,000
		[b]May 1951	**Apr. 1951**	**May 1950**
NPA	Paperboard Production ...Tons	1,251,633	1,006,972	934,600
	New Orders ...Tons	1,264,120	956,085	964,000
	Unfilled Orders ...Tons	658,722	646,878	395,500
	Our Customers Activities Index[c]	**Latest Mo.[e]**	**Previous Mo.[e]**	**Year Ago[w]**
FRS	Manufactures Total Index	230	228	191
	Durable Mfg. Index	274	268	210
	Nondurable Mfg. Index	194	195	177
	Chemical Products Index	294	291	250
	Mfg. Food Products Index	149	148	148
	Printing and Publishing Index	178	175	172
ODC	Magazine Advg.-Printer's Ink Index	343	344	328
	Retail Sales Combined Adjusted Index	342.9	356.6	308.1
	Drug Index	240.3	244.1	221.3
	General Merchandise Group Index	318.4	347.3	291.8
	Grocery and Combination Index	432.7	427.6	377.3
	Prices Index			
BLS	Consumers Price Index[d]	184.5	183.8	168.4
	Wholesale all Commodities[g]	184.0	183.6	152.7
	Wholesale Foods[g]	186.6	187.6	155.5
	Commodities other than Farm Products and Foods[g]	172.4	171.8	146.1
	Wholesale Pulp and Paper[g]	196.3	196.5	155.5
	Purchasing Power of Dollar, Consumers Prices[h]	54.2	54.4	59.4
	General Activity Index			
FRS	Mfg. Production-Worker Payroll	429.4	423.7	333.5
	Unemployment Compensation Initial Claims (M)	729	770	1,294
	Miscellaneous Carloadings–Thousands of Cars	1,373	1,498	1,688
	Electric Output (Million KW hr.)	36,172	33,102	31,864
PTJ	Average 32 P & P Common Stocks as of June 8	$38.49	$39.96	$34.16

[a] 1935-39=100 Unadjusted Index.
[b] 1936=100
[c] New 6-7 day basis.
[d] For Five Weeks.
[e] For details see APPA Monthly Statistical Summary—April 1951 Estimated Figures
[g] Latest Month Available on Request
[x] Revised figures.

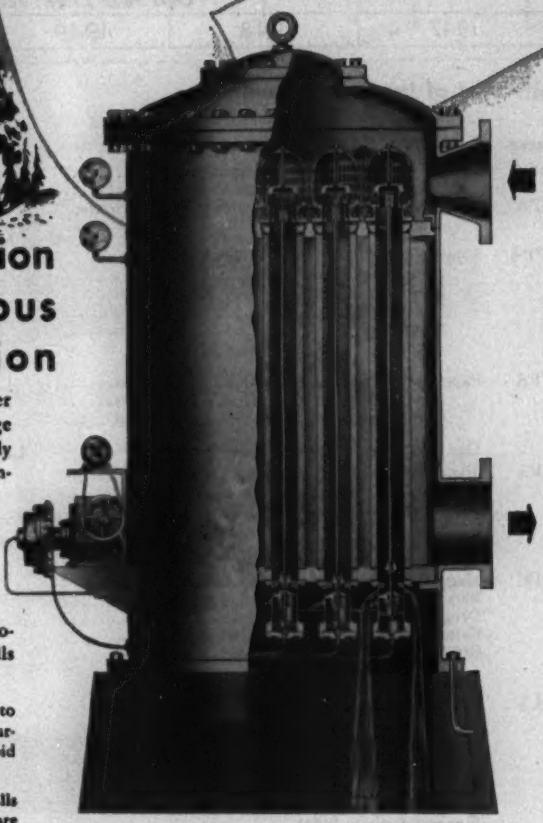
LESS DOWNTIME . .

MORE PAPER

with

ADAMS

AUTOMATICALLY FILTERED WATER



Continuous protection for your continuous machine operation

Higher production goals of today's faster machines must be protected—continuously. Large volumes of water, carrying proportionately larger amounts of impurities, need more attention than ever before.

Clean, automatically filtered water can eliminate down time due to plugged shower nozzles, helps avoid mid-week shutdowns for washing clogged felts.

Experience with Adams Poro-Screen and Poro-Stone Water Filters in pulp and paper mills from coast to coast has proved:

1. Continuous filtration can be relied upon to remove all objectionable impurities, even during seasonal conditions of highly turbid supply.
2. Production continues in Adams-equipped mills when others using the same water source are shut down for cleaning.

Writ. for your copy of the new 20 page booklet on water filtration in the Pulp and Paper Industry, Bulletin No. 691.

R. P. ADAMS COMPANY, INC.

231 EAST PARK DRIVE, BUFFALO 17, N. Y.

News of the Week

Paper TRADE JOURNAL

COLUMBINE LOAN REJECTED

The Columbine Development Co. will request a rehearing on the National Production Authority's rejection of the company's application for a 15-million dollar loan for construction of its western Colorado pulp-paper mill.

Preston Walker, president of the company, said he was "stunned" by the action as there had been every indication from Washington that a Reconstruction Finance Corp. loan would be forthcoming. The NPA rejected the application June 4th.

"We cannot understand on what possible figure the National Production Authority has based its contention there will be a sufficient supply of pulp on hand by 1953 to meet all domestic and defense needs. Such a contention is in direct contradiction to figures, statements and surveys made by every official of the United States, Canadian and United Nations pulp and paper companies and committees."

Columbine has a tentative contract with the Forest Service for several million board feet of beetle-killed timber in the White River national forest and has bought a plant site near Rifle, Colo. Under the contract terms the company must show that it has ten million dollars for plant construction by July 1, 1951. Walker has said Forest Service officials have given oral assurance that this deadline can be extended.

"This is the biggest and most glaring instance of a long number of similar instances which the Colorado corporation has encountered in two and one-half years of trying to salvage dead timber and secure a new industry. The decision shows definitely that the government of the United States and all its agencies now have one main purpose and that is to make it as difficult as possible for groups not within the circle to operate—regardless of merit," Mr. Walker declared.

MILLS NEAR COMPLETION

PRYOR, Okla.—The new $4 million National Gypsum Co. paper mill will be completed by October and go into production before the end of the year. Construction on the mill was started in March. The first structural steel on the plant went into place June 8.

The area's other multi-million-dollar paper mill, the Coronado Manufacturing Co., is awaiting delivery of steel. Construction will be finished late in October and the mill will go into production a few months later.

ST. REGIS' NEW PULP MILL

JACKSONVILLE, Fla. — The largest building permit ever taken out in Duval County has been issued to the St. Regis Paper Co. covering $1,900,000 for the initial construction work on its new kraft pulp mill at Eastport, north of Jacksonville. This represents only a part of the construction cost of the new mill, on which work has been begun. The mill buildings will run $10 million or more. The certificate of necessity issued by the National Production Authority permitted quick amortization of $17,638,000. The plant is expected to be ready for production by mid 1952. Merritt-Chapman & Scott Corp. are the general contractors.

MEAD PLANS $21 MILLION MILL

ROME, Ga. — The Mead Corp. of Dayton, Ohio, announced on June 6 plans to build a $21 million paperboard plant 10 miles from Rome on the Coosa River.

The plant will be a duplicate of the Macon Kraft Co., which is operated by Mead and the Inland Container Corp.

It will employ about 650 persons, and will have an annual payroll of about $2 million.

The site purchased for the plant consists of 700 acres. The company also plans an extensive forestry program. Mead recently purchased 40,000 acres of land near Allatoona Dam, about 40 miles east of Rome, to be used for forestry purposes.

TO BOOST NEWSPRINT PRICE

American Newspaper Publishers Assn. reported Coosa River Newsprint Co., Coosa Pines, Ala., is expected to be the first United States newsprint company to boost prices.

In a letter to customers, dated June 1, the company said: "Preliminary computation under present price regulations indicates clearly that because of increases in cost allowable under existing price regulations in computing ceiling prices, Coosa River would be permitted to increase its newsprint price except for the fact that under its contracts its price is related to the New York market.

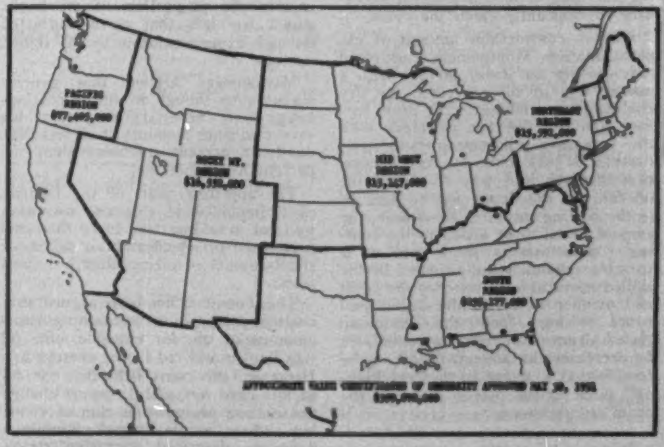
"We feel, therefore, that you should know that in the event of an increase in the market price, Coosa River — because of those costs—would increase its price within the terms of its contract and subject, of course, to any Government ceiling regulations."

B. C. PLANS SULPHUR PLANT

BRITANNIA BEACH, B. C. — British Columbia pulp and paper mills may start their own plants to produce vitally needed sulphur.

A big stockpile of iron pyrites in this mining town 40 miles north of Vancouver now is being whittled down by shipments to France and Japan. The pyrites contain about 50 percent sulphur.

Japanese buyers have been taking approximately 8,000 tons a month from the 100,000-ton stockpile.



Champion Wins KromeKote Suit

Appellate Court Reverses District Court Decision

FRANK MAKARA[1]

The lower or Federal District court of the District of Columbia held that the claims for the "cast coated" paper coating composition were "vague and indefinite at the precise point of novelty and failed to point out the invention with the distinctness required by R. S. Section 4888, 35 U. S. C. A. Section 33." This lower court ruling was reversed by the appellate court of the District of Columbia which ruled that the claims were as distinct as they need to be in view of the nature of the invention.

Coated papers prepared by the "cast coating" method involve the pressing of a continuous paper web, covered with the coating material, against the surface of a large heated chromium plated drum to which the wet paper adheres, with the coated side in direct contact with the hot surface of the drum. As the paper and coating dries out from evaporation of water it releases itself from the drum and can be led away to the winding rolls. Cast-coated paper need not be calendered because it possesses a smooth surface due to the highly polished chromium drum surface with which it was in contact.

During the initial experimental work with this process, one of the problems which had to be overcome was the sticking of coating particles to the surface of the drum. This not only spoiled the paper from which the coating was pulled off but made it necessary to constantly clean the drum.

After a considerable amount of experimentation, Montgomery discovered that coating the drum surface with a minute film of oil prevented the dry coating from sticking to the drum surface and yet did not interfere with the necessary adherance of the wet coating. It was found by experimentation that the best way to obtain the oil film on the drum was to add oil to the coating mixture. Obviously, the amount of oil to be added to the coating composition is small and of a variable amount, being adjusted by the skilled operator who watches the point and manner in which the dry coated paper releases from the chromium plated drum. The operator increases or decreases the amount of oil in the composition to maintain the "cracking-off" point at the proper place on the drum circumference.

[1] Registered Patent Attorney.

It was this discovery that made possible the commercial production of cast coated paper or KromeKote.

Montgomery in his specification stated that the exact thickness of the oil film was unknown and would vary for different oils. The thickness of oil film was infinitesimal and the only gauge of an effective thickness was to be found in the results obtained. The amount of oil to be added was stated to vary with the kind of metal used on the drying drum surface, the temperature of the drum, the condition and moisture content of the paper, etc.

Cast coated paper must loosen from the drum surface only when adequately dried. Too much oil will yield a paper which loosens before complete drying whereas too little oil is ineffective in freeing the coating from the drum surface. Clearly the skilled operator must adjust the amount of oil "on the spot" according to how the paper behaves.

The specification gave 8 examples, not one of which showed the use of more than one (1) percent oil.

The Patent Office allowed a claim reading one one-tenth to one percent of oil in the coating composition, but would not allow claims reading on an amount of oil sufficient to effect the desired result. The argument of the Patent Office being that such broader generic claims did not numerically specify the proportion of oil to be added but left that to be adjusted through experimentation by the skilled operator.

Montgomery argued that generic claims even though in functional language were necessary to protect his invention since amounts of oil less than one-tenth percent and more than one percent were operable.

The appellate court of the District of Columbia held that the invention was not in adding "not more than one percent of oil" but rather in adding a small amount of oil to effect a desired result.

The Patent Office also argued that coating compositions containing small amounts of oil, for example, pine oil was known and old in the coating art. However, the court held that the oil in this case was added, not to change the coating composition characteristic, but rather "to obtain and maintain a definitely described operating condition" and hence the amount was necessarily variable. Bradner, in U. S. patent 1,826,726, added pine oil to reduce foaming and clearly this amount is not necessarily the amount needed to free paper from a heated drum surface.

The court stated that the allowed claim reading on one-tenth to one percent oil is also a variable amount and in itself needed experimentation to find the precise amount necessary. Hence other and more generic claims reading on a small amount of oil effective to produce a desired result, although requiring some experimentation nevertheless were "sufficiently definite" to satisfy R. S. 4888.

The appellate court therefore gave a judgment authorizing, i.e. directing, the Commissioner of Patents to grant Montgomery et al Claims 31, 32 and 33, the broad generic claims which recite no numerically specific amount of oil to be used in the coating composition.

PULP LIMITATION ORDER

WASHINGTON, D. C.—An order limiting use of pulp in paper manufacture is nearing promulgation by NPA, it was indicated this week.

The announcement was made at a meeting with waste paper dealers and it was said, is necessary because of declining pulpwood supplies and a drop in pulpwood imports.

Waste paper industry members pointed out, however, that such an order would be ineffectual unless certain types of waste paper, which can be substituted for pulp, also are limited, such as white envelope cuttings, kraft and manila cuttings, etc.

The dealers' spokesmen also emphasized that unless certain toll agreements commonly made between mills and paper manufacturers, are frozen in line with a base period of the first half of 1950, waste paper dealers in many cases would be put out of business.

NPA agreed to consider the recommendations. The meetnig also took up means for reclaiming or conserving waste paper, and NPA plans to bring the matter of salvage to attention of defense agencies for their cooperation, especially in saving corrugated materials.

DEFINE PAPER MAKING

This is Paper Making. *According to Subcommittee on Newsprint of the Select Committee on Small Business, U. S. Senate, this is all there is to it:*

"The basic method of making paper has changed little over the centuries. Essentially it consists of beating cellulose fibers in water so that they form a wet pulp of adequate cohesive quality, then spreading and permitting the pulp to dry in a thin even layer. This was done by hand until 1798 when a paper machine was invented in France, which was introduced to England a few years later by Henry Fourdrinier, after whom the machines are now called. The machines gave impetus to the industry by making the process a continuous one and allowing paper to be made cheaply and by the roll (K 230-2).

"In a modern paper mill the breaking and beating of the raw material is done by knives on a bed plate and a revolving drum. The paper machine consists of a 'pond' of wet pulp which flows onto a continuous wire-mesh cloth band, which may be from 70 to 240 inches wide. The thin sheet of wet pulp than passes through various rollers, over heated cylinders and through vacuums in order to dry. As it is desirable to dry the sheet slowly, and as modern machines run at high speed, a very large number of rollers and drying cylinders are used. The machines also perform auxiliary processes such as tinting, sizing (surfacing), loading, and calendaring (glazing) on the pulp or paper. Contrary to popular impression most papers are tinted by the addition of some coloring matter, as even bleached pulp retains some residual yellow color by itself. Newsprint pulp is tinted by the addition of red and blue coloring matter to make it a neutral gray which is nearly white; but it turns yellow again in a relatively short time (K 230-2). Newsprint machines handle sheets from 160 to 240 inches in width, and run off paper at the rate of 550 to 1,200 feet a minute (K 235). Rags, and similar materials, were used for making paper until about 1880, when wood began to be used as a raw material (K 235). The manufacture of newsprint first became a specialized business, as distinguished from the manufacture of other types of paper, about 1910 (A 162). At the present time, newsprint is ordinarily made from 80 to 85 percent ground wood pulp, which is pulp that has been ground mechanically, and from 15 to 20 percent of 'chemical wood pulp,' which is pulp that has been prepared chemically (A 162)."

INCREASE NEWSPRINT TAX

STOCKHOLM, Sweden—The Swedish government on June 2 decided to raise export tax on newsprint from 200 to 260 crowns a ton ($39.20 to $51) a ton from July 1.

U. S. IMPORTS OF WOOD PULP

Preliminary, April, 1951

Item	Country of Origin	Short Tons
Mechanical		
Unbleached	Canada	23,686
	Sweden	112
	Norway	844
	Finland	477
		25,119
Screenings	Canada	319
Bleached	Canada	960
	Austria*	162
		1,122
Chemical		
Sulfite, Unbleached	Canada	36,052
	Sweden	2,105
	Norway	1
	France	16
	Germany	222
	Austria	346
	Switzerland	89
	Finland	1,095
		40,006
Screenings	Canada	578
Sulfite, Bleached, Rayon & Special Chem. Grades	Canada	20,320
	Sweden	1,292
		21,612
Other	Canada	21,413
	Sweden	3,028
	Norway	169
	Germany*	111
	Finland	32
		24,753
Sulfate, Unbleached	Canada	13,913
	Sweden	3,012
	Finland	5,155
		22,080
Sulfate, Bleached	Canada	37,781
	Sweden	3,768
		41,549
Soda, Unbleached & Bleached	Canada	3,007
Totals, April	Canada	158,029
	Sweden	13,397
	Norway	1,014
	Finland	6,759
	Austria	508
	France	16
	Germany	333
	Switzerland	89
		180,145

* To be investigated by Census.

NYQMPA and Paper Groups Meet

Leaders of the paper and paper products industry held their first meeting June 5th, with officials of the New York Quartermaster Procurement Agency.

Industry members present at the meeting represented the Writing Paper, Book Paper, Kraft Paper and Waterproof Paper Divisions of the Quartermaster Association's Paper and Paper Products Industrial Group. The Group is one of a number of major commodity groups organized by the Quartermaster Association in its program of Quartermaster Corps-Industry cooperation. Each of these have been holding a series of meetings with NYQMPA officials designed to promote mutual assistance in the solution of procurement and industry problems.

NYQMPA staff members spoke on procurement problems and the current status of procurement of paper items purchased by the Agency, which has the purchase responsibility for these items for the Army, Navy and Air Force. Other subjects discussed included: current requirements, the necessity for contract placement by June 30, 1951, the effects of OPS Directive CPR 22 on industry of prices for long term contracts, and QM methods of handling contracts vs. commercial practice.

E. W. Tinker of the American Paper and Pulp Assn. served as temporary Chairman of the meeting. Other industry leaders present included:

Kraft Paper—L. J. Doyle, Union Bag & Paper Co.; D. Every, Kraft Paper Assn.; George Runyon, Crown Zellerbach Corp.; George Stuhr, International Paper Corp.

Writing Paper—J. E. Massengale, Eastern Corp.; Harold Wright, Champion Paper & Fibre Co.

Book Paper—Harold Holden, Oxford Paper Co.; Wiley Jennings, West Virginia Pulp & Paper Co.

Waterproof Paper—E. R. Bolman, Chase Bag Co.; Philip O. Deitsch, The Waterproof Paper Mfrs., Ass'n.; J. D. Johnston, Union Bag & Paper Corp.; H. H. Maynes, Arkell Safety Bag Co.; Robert H. Wood, Simplex Paper Corp.; S. A. Ulm, Arkell Safety Bag Co.; L. F. Norstrand, Specialty Converters, Inc.

POWER UNIT NEARS COMPLETION

HOLYOKE, Mass.—Interested in the dual subjects of electric power and flood control, Holyoke's paper manufacturers watched with interest as construction of the $4 million gigantic hydro-electric development on the Connecticut River gradually neared completion. According to Holyoke Water Power Co. officials, who, with the backing of papermakers had won out in 1949's hotly-contested fight for the power rights, the present timetable indicates the first of two 15,000 kilowatt units will be in operation by late fall.

UNION CONTRACT EXTENDED

HOLYOKE, Mass.—A 30-day extension has been voted by members of Local 226, Paper Mill Workers, AFL, relative to the present contract which expires May 31. The union is in negotiation with mill managements for a new contract while at Washington, the National Labor Relations Board is studying data on a CIO petition for a bargaining agency election concerning Local 226 and several members of Eagle Lodge of Papermakers, AFL.

In agreeing to the month's extension of the present pact, Local 226 has done so with the understanding that when a new contract is drawn up its terms will be retroactive to June 1.

WHICH SELLS MOST?

Hudson Pulp & Paper Corp., a heavy user of radio and TV, is going to find out. It is offering four packages of napkins to every housewife sending in a postcard. The offer will be made on 35 CBSTV stations and on all radio programs. Coupons redeemable at the local merchants will be sent to each respondent. Merchants will receive retail price plus 2c handling cost for each coupon.

NEW SULPHUR SUPPLY

OTTAWA—C. U. Daniels, president of Royalite Oils Co., has indicated that final decision on the erection of a sulphur plant in the Turner Valley area of Alberta will be made shortly.

The plant would recover elemental sulphur from natural gas available in the field. Negotiations with Turner Valley natural gas producers on the royalty payments are proceeding, he said.

TRINITY BAG ERECTS PLANT

JACKSONVILLE, Fla. — The Trinity Bag and Paper Co. of New York has bought a 30-acre site for a paper bag manufacturing plant at Yulee, Fla. The plant site fronts on the Seaboard Air Line tracks and Highway 17. The proposed plant will employ from 100 to 150 persons in a building to be constructed with about 100,000 sq. ft. of floor space. Benjamin Mintz of New York is president of the company.

NATIONAL BUYS JAITE

National Container Corp. has purchased the Jaite Co. of Jaite, Ohio. Jaite manufactures about 40 million multiwall sacks per year plus specialty bags.

PEOPLE

D. D. RHEBECK has been appointed comptroller of Rayonier Incorporated. Mr. Rhebeck who has been in charge of the company's Timber Division accounting in Hoquiam, Wash., will transfer to the executive offices in New York sometime in July.

JOHN ZIMMERMAN was recently promoted to Division manager of the Hamilton Division of Champion Paper and Fibre Co., Hamilton, Ohio. He has been with Champion for 20 years. For the past 16 months he has served as mill manager at Hamilton.

RICHARD S. DUELL is leaving his position as manager of the Technical Service Department of Union Bag and Paper Corp., Hudson Falls, N. Y. He has accepted a position with the F. P. Bartlett Co. at Cambridge, Mass., as assistant to the president.

WILLIAM J. TILDEN, vice-president of the company, will become manager of the Chicago office of Mead Sales Co. on August 1.

Mr. Tilden will succeed to the position formerly held by the company's first vice-president, GEORGE H. FAY, who has been associated with Mead for thirty-two years. Mr. Fay, though retiring from active duty, will remain available in a consulting capacity.

JOHN E. CAMPBELL has been appointed display manager of Sherman Paper Products Corp. with headquarters at the home office in Newton Upper Falls, Mass. A. L. LYTLE will continue as sales manager of both Display and Specialties Divisions.

KARL SWENNING, Hollingsworth & Whitney Co., Inc., will be a member of a panel to discuss the efficient use of New England's forest resources during the 103rd quarterly meeting of the New England Council at the Equinox House, Manchester, Vt., June 21-22. Mr. Swenning will speak in the afternoon of June 21.

O. A. (JACK) KNIGHT, a prominent labor leader, was sworn in recently as Assistant Administrator of the NPA.

Mr. Knight will head the NPA Office of Labor Requirements and will work directly with Administrator Manly Fleischmann and Deputy Administrator Thomas S. Nichols in meeting labor requirements and to assure an equitable consideration of labor's problems.

He will have as his assistant TED F. SILVEY, another labor leader, who has been appointed as Deputy Assistant Administrator in NPA.

DR. VERNE L. HARPER, director of the Northeastern Forest Experiment Station at Upper Darby, Pa., has been appointed assistant chief of the Forest Service in charge of research.

In his new assignment, which becomes effective July 1, Dr. Harper will coordinate all research activities of the Forest Service. He will supervise seven divisions in the Washington office, the Forest Products Laboratory at Madison, Wis., 12 regional forest and range experiment stations, 62 forest, water and range research centers and 102 experimental forests.

HORACE A. PINKERTON, certified public accountant, who has been connected with the firm of Scovell, Wellington & Co. in Springfield, Mass., has assumed his duties as accountant for Knowlton Brothers, Inc.

NEW PAPER USES

Corroflex Sleeves and Tubes

Designed to boost production of vital protective packaging products, Sherman Paper Products Corp., Newton Upper Falls, Mass., has installed a battery of new production machines, devoted to the manufacture of cotton-stitched and wire-stapled corroflex sleeves and tubes.

The shipper simply inserts the product, seals the other end by staple or stitch, and the package is ready to ship. The new corroflex sleeves and tubes provide the speed and efficiency of a bag, but they add the vital factor of complete cushioned protection from blows and abrasions. It is claimed they are rapidly replacing hard-to-get corrugated cartons.

New Vapor Wrapper

A huge increase in the packaging of iron and steel products with volatile type rust-inhibited wrapping materials was predicted by George A. Daubert, president of the Nox-Rust Chemical Corp., Chicago.

Daubert said that newly-issued specifications for the materials have paved the way for a major change in government packaging methods. He explained that with federal specifications determined and testing methods being established, specific wrappers soon will be qualified for purchase by the government. A Nox-Rust innovation in this field, called Vapor Wrapper, is under consideration by the various government facilities, he said.

Nox-Rust vapor wrappers are special wrapping papers, impregnated with Callex, a patented chemical developed and manufactured exclusively by the Chicago firm. They are gaining considerable favor in industry for preventing rust in packaging of iron and steel products of all types, varying from automotive and aircraft parts to farm implements and business machines.

Callex prevents rusting by chemically rendering moisture noncorrosive. Use of this treated paper, instead of oily or greasy compounds, eliminates the double task of applying and later removing protective coatings. These factors represent savings in labor and time, which are especially important for defense material.

Usage of vapor wrapper in 1951 will far surpass that of the previous year, according to Mr. Daubert. Nox-Rust is expanding production facilities for the manufacture of vapor wrapper in order to handle the greatly increased demands of private industry in addition to the expected large government requirements.

FOURDRINIER *Flexibility*

Downingtown Head Box and Slice are Adjustable to Meet Wide Range of Conditions

The design of the Downingtown Fourdrinier Head Box and Slice installed at Sonoco Products Co., Hartsville, S. C. is an example of the extreme flexibility which it is possible to build into a machine.

The stainless steel head box has a removable five-valve manifold inlet, and, because of its design the size and number of inlets are quickly changed when desired, without disturbing the head box itself. Adjustable partitions permit changing flow characteristics from inlet to slice to suit operating conditions. In addition, all parts are easily accessible for cleaning.

Interchangeable high and low speed slices are provided and are designed for machine speeds up to 1500 FPM. The low speed slice is used for machine speeds up to 250 FPM and above that the high speed slice is substituted.

These are a few of the adjustments which can be made in this most modern and versatile Fourdrinier. And what is vitally important, from an operating and maintenance standpoint, is that all adjustments are made by regular mill employees and do not require the services of highly trained engineers. This one factor alone prevents excess down-time and non-productive man hours of labor.

Write for this interesting bulletin: "Building Versatility into a Fourdrinier," which describes the complete machine in considerable detail.

DOWNINGTOWN MANUFACTURING COMPANY, DOWNINGTOWN, PA.

Pacific Coast Representative: John V. Roshund, Pacific Bldg., Portland 4, Oregon

DOWNINGTOWN

STAINLESS STEEL FOURDRINIER

Built-in Versatility

DESIGNERS AND BUILDERS OF PAPER MAKING MACHINERY SINCE 1880

Locker Wrap

Marathon Corp., Menasha, Wis., has introduced a new and improved version of its well-known Tite locker wrap.

Called Tyton Tite it derives its name from the Tyton coating applied to it for extra protection and stripping qualities. Tyton is a special formula developed by Marathon. It has a hard surface and a brilliant gloss.

The combination of two dense papers, the Tite laminant used to bind the two sheets together and the film of Tyton coating make Tyton Tite a locker wrap that actually offers double protection against dehydration, cause of freezer burn, loss of flavor, and loss of appetizing appearance. At the same time it resists the passage of oxygen, thereby retarding development of rancidity. Recent tests made by independent college laboratories point to the importance of this function.

Neither the Tyton coating nor the Tite laminating material become brittle at zero temperature (0° F.). They neither crack nor flake, and therefore the protective film is maintained under normal storage and handling conditions.

Tyton Tite's pliability is one of its outstanding features. It fits snugly around irregular cuts of meat, making it possible to expel all excess air in the wrapping process and thus preserving the goodness of the product. As it is formed around an object it remains in the position placed.

Meat is placed against the Tyton (glossy) side of the wrapper, from which it strips cleanly when the housewife opens the package.

Tyton Tite is available in two colors, tan or white. Rolls for use in locker plants are 750 feet long and come in four widths, 15", 18", 20" and 24".

FORESTRY

Big Crop Conservationists

A bumper crop of budding conservationists was produced during two months of three-day high school workshops at Trees for Tomorrow Camp in Eagle River, Wis. The 1951 spring sessions for Wisconsin high school students closed on June 2, and the camp swung into adult conservation activities.

More than 650 pupils, boys and girls, from 55 different high schools throughout Wisconsin attended the conservation workshops on school time this season.

Chemical Debarking Study

Cooperative research by industry and education into the chemical debarking of living trees is underway at State University of New York, College of Forestry, Syracuse. Private co-sponsors are nine pulp and paper companies and a chemical company, with the cooperation of other interested pulp and paper firms.

The research team includes: Dr. Hugh Wilcox, plant physiologist of California, for the last five years a wood technologist at the Oregon Forest Products Laboratory, Corvallis; Dr. Felix Czabator, forest botanist and pathologist, who has 11 years of forestry and logging experience; Dr. Robert F. Smith, bio-chemist, who has studied the chemistry of proteins recently at the U. of Minnesota; and Douglas C. McIntosh, consulting forester on loan by the Canadian Forest Products Laboratory, Ottawa, where he is a staff wood technologist.

Dr. Wilcox is group leader, with Dr. Czabator in charge of field operations. These began in April with reviews of field equipment and methods of chemical debarking by West Virginia Pulp and Paper Co., International Paper Co., and Armstrong Forest Co.

Development of "simple, efficient, and controllabe techniques" for loosening bark of living trees is the aim of the project. "The studies are primarily fundamental in nature, to ascertain the physiological and biological mechanisms involved in bringing about loosening of the bark," Dr. Edwin C. Jahn, research director of the College of Forestry, said.

Other considerations are being taken into account, such as management and logging problems, retention of chemical in the wood and its effect on pulping and quality of the finished paper.

The Huntington Wildlife Experiment Forest, 15,000-acre property of the College in the central Adirondacks, will be the principal site of the work. The project set up for a year ending April 30, 1952, with the way open for renewal, has an initial budget of $64,000. Of this, $50,000 is a grant from the industry sponsors and $14,000 is a contribution in services, supplies, and equipment from the College of Forestry.

The grant is the first one to the new Research Foundation of State University of New York, specially established to encourage and administer private financing of research by State U. personnel and facilities.

Dean Joseph S. Illick, Dr. Hardy L. Shirley, and Dr. Jahn are the college committee for the research. The corresponding industry committee consists of M. H. Collet, K. A. Swenning, L. J. Kugelman, R. R. Drummond, H. G. Schanche, and Y. E. Lebedeff. H. E. Brinckerhoff and W. S. Bromley of the American Pulpwood Assn. are project treasurer and secretary, respectively.

Sponsoring companies of the nonprofit unincorporated association supporting the research are International Paper Co., Penobscot Chemical Fibre Cp., St. Croix Paper Co., American Smelting & Refining Co., P. H. Glatfelter Co., Brown Co., Hollingsworth & Whitney Co., Oxford Paper Co., Eastern Corp., and West Virginia Pulp and Paper Co. Cooperating companies are the Armstrong Forest Co. and the Marathon Corp.

Forest Management Cost

How much does it cost to manage timberland intensively? About 73c per acre per year, according to the large-scale selection management study that has been in progress the past 14 years on the Crossett Experimental Forest in southern Arkansas.

The chief expense, 21.6c, has been for maintenance and depreciation of the network of roads required for efficient year-round logging. General supervision of timber markers, scalers, and fire fighting crews has cost $19. Taxes have been 12c.

Item	Cost per acre per year, Cents
General supervision	19.0
Taxes	12.0
Road maintenance	11.0
Road depreciation	10.6
Timber marking	6.0
Fire protection	4.0
Timber stand improvement	3.7
Cruise and management plan	2.5
Car depreciation	2.3
Car expense	1.6
	72.7

These figures include only costs that would apply to an intensively managed private holding. While road-building, timber stand improvement, and the timber cruise and management plan revision are needed only at relatively long intervals, it is customary to charge them off annually. — R. R. Reynolds, Southern Forest Experiment Station.

Timber Policy Opposed

IRON RIVER, Mich.—Some 25 loggers in the district are protesting the sale of about 12,000 cords of pulpwood to be cut from the Bush Creek area in the Ottawa National Forest, in the northwest part of Iron County, Mich.

The loggers said they cannot bid on the cutting because most of them are small operators. Only large corporations, they claim, have the facilities to bid on such a large job.

The loggers recommended that the large tract in Bush Creek be divided into parcels so small loggers may bid. At the meeting held in the city hall, forestry officials declared it was too late to alter the plans, and that it has been the policy of the government to offer pulpwood and timber sales on a large scale where conditions permit.

Protest of local operators is in line with a similar complaint made a few months ago by the Timber Producers Assn., of which local operators are members.

ASSOCIATIONS

PACKAGING MACHINERY MEET

NEW YORK, N. Y. — The Packaging Machinery Manufacturers Institute will hold its 19th annual meeting October 13-17, 1951, at the Mid Pines Club, Southern Pines, N. C.

WITH NEW PLASKON AMINOPLAST

WATCH the savings and wet-strength increase when you switch to new Plaskon Aminoplast in your formulas!

Where Plaskon Aminoplast replaces urea resins, users have a choice of benefits and savings... an equal weight of Plaskon Aminoplast can increase the wet-strength as much as 29% over urea resin... or, you can attain wet-strength equal to your present urea-resin formula, yet use 5 to 30% *less* Plaskon Aminoplast.

When you replace melamines with Plaskon Aminoplast, wet-strengths remain as high or higher, yet material costs decrease considerably. Because addition procedures are simpler and cheaper, you ring up process savings with Plaskon Aminoplast, too.

Plaskon Aminoplast is easy to mix, easy to add, can be safely stored in solution for several days. No drastic adjustments of your formulas or procedures are necessary.

May we show you what Plaskon Aminoplast can do for your papers... and your costs? The Plaskon technical man will gladly run a trial batch at your mill whenever you say the word. In the meantime, let us send you technical bulletins on Plaskon Aminoplast.

Use Plaskon Resins to improve boxboard adhesives! Boxboard adhesives made with Plaskon Resins are unusually effective—the bond remains stronger than the Kraft paper used even after 24 hours' soaking in water! For highly water-resistant, weatherproof adhesives for any corrugated board, investigate Plaskon Resins now. They comply fully with current government specifications.

PLASKON DIVISION • LIBBEY • OWENS • FORD GLASS CO.

Toledo 6, Ohio

Branch Offices: Atlanta, Ga.; Chicago, Ill.; Lenoir, N. Carolina; Memphis, Tenn.; Milwaukee, Wis.; New York, N.Y.

In Canada: Canadian Industries, Ltd., Montreal, P. Q.

World's largest manufacturer of urea resin glues
Also manufacturers of weatherproof boxboard adhesives, tub-sizing resins, abrasive binders, resin adhesives and ink-formulating resins

PLASKON®

Corrugated Combining Conference

TAPPI'S Lake Erie Section played host to over two hundred enthusiastic delegates from eighteen different states at the First Corrugated Combining Conference held in Cleveland on May 17th and 18th at the Hotel Statler.

One hundred and fifty of those attending started the two day session Thursday afternoon by seeing how the Hankins Container Co. and the Robert Gair Co., Cleveland plants operated. Art Cheely, Quality Control Supervisor acted as host at Hankins Container and H. A. Downing, Division Manager, was host at Robert Gair.

Lake Erie Chairman Lew Burnett of the Ohio Boxboard Co., welcomed the delegates and introduced Moderator Des Long, Technical Director of Container Corp. of America and Chairman of TAPPI'S Corrugated Containers Committee, who discussed the year and one-half old Corrugated Containers Committee's work on the many problems of the corrugated industry.

Mr. Long then introduced Carelton Root of the Container Section Institute of Paper Chemistry who delivered a paper entitled "Theoretical and Actual Qualities of Corrugated Board." Mr. Root's remarks centered about a new approach to the prediction of strength characteristic of corrugated board using basic techniques presently used in the design and engineering of structures such as bridges and airplanes.

Mr. Root was followed by R. T. Cassidy, vice-president of the Jackson Box Co., who discussed "Present Operating Problems and Future Hopes of a Corrugated Superintendent." Many pieces of equipment now standard in the industry were tried out and proven in his plant. The ever present problems of adhesion, roll wear, fingerlines, and high-low corrugations were brought out. Mr. Cassidy stressed the importance of good housekeeping and preventative maintenance as requisites for good operation. A well engineered drying system is often the difference between success and failure. Future hopes outlined were speeds of 1,000 feet per minute with automatic splicing equipment and side guides. Better designed corrugators to make it more convenient to operate at higher speeds has been the ultimate goal of every corrugator superintendent in the country.

The group gathered after lunch to hear Walter Goettach, vice-president of the Samuel Langston Co., discuss "Past, Present and Future Design of Corrugated Combiners." Mr. Goettach traced the beginnings of the corrugator back to 1870.

Present corrugators while still of the same basic design, employ slitting and scoring attachments, double cutoffs, are heavier and trim up to 115".

Mr. Goettach stated that developments for the future would not be drastic but would undoubtedly be an orderly evolution. New developments currently in the pilot plant stage are the replacement of springs between the two corrugating rolls with hydraulic apparatus. Additional heat in the form of Dowtherm and Arachlor may open up new types of useful materials not now useable for lack of adequate heat. Increased roll life is being given serious thought, as is the elimination of warpage. Mr. Goettach concluded by saying that the machine of the future will reflect the close cooperation and constant effort on the part of the machine builder and operator to solve their mutual problems.

A. E. Montgomery, vice-president of the J. O. Ross Engineering Corp., discussed "Theoretical Problems of Heating and Drying" by treating the corrugator operation as a heat transfer problem. The basic formula states that the quantity of heat needed in BTU's is dependent on the coefficient of heat transfer of the material, the area of heating surface and the temperature difference between the material being heated and the temperature of the heating medium.

MIAMI VALLEY SUP'TS

Golfing, plant touring, and banqueting featured the entertainment given the Miami Valley Division of the Superintendents Association by The Orr Felt & Blanket Co. in Piqua, Ohio, on May 25.

Chairman, John Burdsall, acted as toastmaster. Guests at the evening banquet were welcomed by President M. B. Orr. The dinner was held in the company's cafeteria. Suitable prizes were awarded to the winners of the golf matches.

Principal business was the election of new officers of the Miami Valley Division. The successful candidates were as follows: Chairman, E. H. Bindley, Cheney Pulp & Paper Corp., Franklin, Ohio; first vice-chairman, Bernie Merriss, The Oxford-Miami Paper Co., West Carrollton, Ohio; second vice-chairman, George Lydick, The Beckett Paper Co., Hamilton, Ohio; secretary-treasurer, Myron Whitner, Cheney Pulp & Paper Corp., Franklin, Ohio.

The retiring chairman and secretary-treasurer of the Miami Valley Division are, respectively, John E. Burdsall and Lowell Newman, both of the Crystal Tissue Co., Middletown, Ohio.

Some 235 visitors enjoyed the hospitality of The Orr Felt & Blanket Co. Consensus of opinion was that the Division would be glad to continue the tradition by holding the next May meeting in Piqua.

CPPA SUMMER MEETING

The 1951 summer meeting of the Technical Section of the Canadian Pulp & Paper Assn. took place at Bigwin Inn, Lake of Bays, Ontario, on June 7-9. The program included subjects covering all phases of pulp and paper manufacturing.

Among the subjects scheduled were the following:

Drying and Ventilating
1. Operation of Grewin systems.
2. Felts and felt drying.

Electrical Engineering
1. Paper machine drives for speeds from 1200 to 1800 f.p.m.
2. A new draw indicator.
3. A new machine speed recorder.

Materials Handling
1. Pulpwood storage and reclaiming.
2. Mechanization of lapped pulp charging into pulpers.

Process Instrumentation
1. Some recent process control applications.

Board
1. Modern vat design and operation.
2. Alterations necessary to obtain maximum efficiency from existing vats.
3. The effect of various calendar coating applications on printability.

Fine Papers
1. Overcoming difficulties in printing of machine-finished paper.
2. Finishing room design and operation.

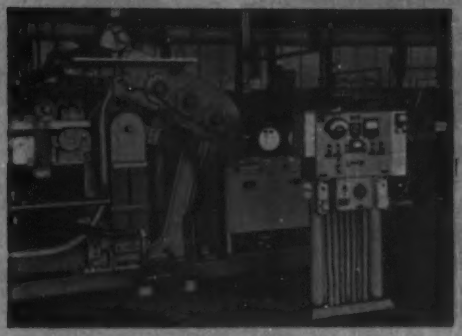
Newsprint
1. Wire drainage.

Alkaline Pulping
1. Soda and heat recovery in sulphate pulp mills.
2. Bleaching of kraft pulp.
3. A discussion of operating problems.

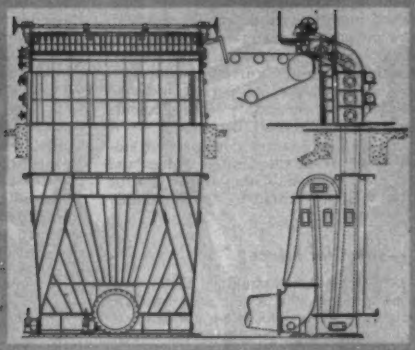
HARRY LONDERGAN APPOINTED

E. P. Magel announces the definite appointment of J. H. Londergan as Executive Secretary of National Paper Trade Assn. Since the Annual Meeting last spring he has functioned ably as Acting Executive Secretary and it is the opinion of officers and Executive Committee that he combines the needed qualifications for the position in a very high degree.

OUTSTANDING SLICE ARRANGEMENTS



Closed Pressure Slice on machine designed for speed of 3100 feet per minute.



Assembly drawing of Flow Spreader and Closed Pressure Slice.

Shop assembly of Flow Spreader and High Slice.

The new Pusey jones Closed Pressure Slice combined with the Flow Spreader, now proved in mill operation, provides the ideal approach flow to the Fourdrinier wire on today's high-speed machines.

Three of these Slices are now in operation . . . and three are under construction.

For moderate speeds, the Pusey jones High Slice may be used where preferred. It is now in successful operation on ten installations . . . and two are under construction.

Whatever your stock or operating speed may be, these Slice Arrangements and Flow Spreaders will give the best possible formation for every condition. The *right* slice for your new or rebuilt machine is a matter between you and the Pusey jones engineers. Write or call us today.

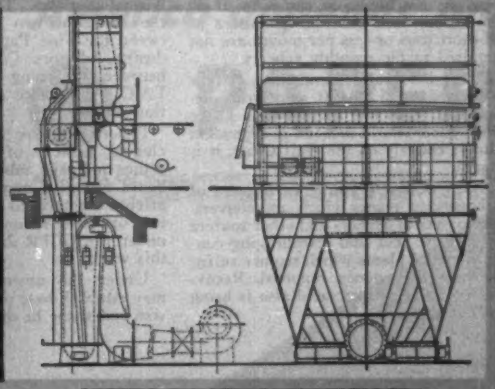
THE PUSEY AND JONES CORPORATION

Est. 1848 — Builders of Paper-Making Machinery

Fabricators & Welders of all classes of Steel & Alloy Products

Wilmington 99, Delaware, U. S. A.

Mill installation of High Slice.



Assembly drawing of Flow Spreader and High Slice.

GOVERNMENT GOSPEL

Canada Controls Sulfur Imports

OTTAWA — Rt. Hon. C. D. Howe, Minister of Trade and Commerce, has announced that, due to world shortages and in accordance with Canada's international obligations, an Order-in-Council has been passed placing under import control sulfur and brimstone (crude or in roll or flour).

Sulfur and brimstone may be imported under General Permit until June 30, 1951, after which date individual import permits will be required. The purpose of maintaining this commodity under General Licence for one month is to allow current business to be completed and to permit industry to make the necessary arrangements for obtaining import licenses.

All of this country's imports of sulfur come from the United States and last year Canada's imports of sulfur from U. S. reached approximately $7,700,000.

Newsprint for France

OTTAWA—Approximately 2,500 tons of newsprint will be supplied by Canada out of the 3,000 tons allocated to France to meet "conditions of exceptional urgency." The balance is expected to come from the United States.

NPA Regulates Sulfur Export

WASHINGTON, D. C.—Sulfur can be shipped only upon NPA authorization, under an order last week further tightening controls and designed to conserve supplies under a growing scarcity of this material. All sulfur users will be held to 100 percent of last year's rate of consumption. Restrictions are effective immediately, as to limits of use, and on July 1, as to authorization of shipments.

Beginning this month, however, sulfur users are required to make a monthly report on or before the 28th of each month, on use of sulfur in the preceding month and his inventory at the close of that month. He will also be required to estimate use in the current month and the expected inventory at the close of the month. The restrictions do not apply on shipmnts of 60 short tons each quarter, and users of 20 short tons or less per month are not required to file monthly reports.

Total 1951 sulfur production is now estimated at 5,200,000 tons with demand at least one million tons above this figure. World demand is dependent almost entirely on the Gulf Coast, it is stated.

NPA is now granting certificates of necessity to plants which are converting to pyrites burners and other sources of sulfuric acid, and discouraging construction of plants which require sulfur burners, the agency reported. Recovery of spent sulfuric acid also is being encouraged.

Certificate of Necessity Applications

WASHINGTON, D. C. — Applications for certificates of necessity filed after June 15 will be given deferred consideration except in urgent cases, until after the present backlog has been processed, the Defense Production Authority announced this week.

NPA has been delegated authority for some such applications, including those for chemicals, pulp and paper, while other agencies have been responsible for reviewing and handling applications from other industries. As of May 25, however, a total of 9,153 applications had been referred to these various reviewing agencies, and 7,081 were still pending review by these agencies.

Under the current action, Defense Production will continue to accept applications for certificates of necessity after June 15, but action on those referred to NPA after that date will be deferred to permit expediting of those received on or before June 15. Special attention will be given to applications involving urgent defense installations, regardless, it was said.

An earlier announcement by Defense Production showed that an industry-by-industry summary of facilities expansion was largely devoted to expanding production of basic materials. Applications for expanding pulp and paper facilities numbered 141, involving $746,200,000 of which 32 applications have been approved, covering $352,100,000 of which $209,000,000 was eligible and 59.4 percent had been certified.

Paper Price Regulation

WASHINGTON, D. C. — Industry representatives' activities at OPS this week included a recommendation by wholesale paper distributors that a special price regulation be written, adapting the principles of SR 29 to their industry. S.R. 29 permits distributors to pass on increases in manufacturers' prices put into effect under MGCPR 22, and obtain relief in cases where their ceilings did not provide a normal mark-up. The proposals were the result of two meetings, one between the Fine Paper Merchants' Industry Advisory Committee, and one between Wrapping Paper Merchants' I.A.C., with Office of Price Stabilization officials.

Paperboard box manufacturers, including makers of laminated sheets drums and pails, tubes and other paperboard products, may use their regular pricing formulas to determine base period prices on various sizes and shapes, under the GCPR 22, OPS announced this week.

Under the amendment, converters may establish base period prices on any size and shape he did not manufacture in the base period, and compute his new ceiling by adding allowable increases in labor and material costs, as provided under CPR 22.

Request ECA Financing

The following countries request ECA import financing:

Austria—Sulphur	$50,000
French North Africa —Sulphur	275,000
France—Sulphur	700,000
France—Newsprint	70,000
France—Newsprint from Canada	350,000
France—Pyrites from Canada	140,000
Greece—Pulp, paper and paper products from U. S. or Canada	50,000

Shape New Groundwood Regulations

WASHINGTON, D. C. — Work is progressing on development of a new regulation for the groundwood specialty papers group, modeled on the old OPA regulation of World War II.

An industry committee held its third meeting with OPS officials, helping to shape the pending new order. The committee recommended two additional categories be added to those recently listed here; Offset No. 1 and Offset No. 2. A group also will be set up to work with the bookpaper industry committee, because of overlapping interests in bookpaper, it was announced.

Ask Steel Strapping Modification

WASHINGTON, D. C. — Modification of current restrictions on steel strapping with particular reference to some paper industry uses, was recommended to NPA by steel strapping manufacturers.

Among permitted uses would be for roll-end binding for fiberboard rolls. Manufacturers told NPA that nonmilitary consumers of all classes will get only 60 percent of requirements by August unless the industry receives spot assistance in obtaining steel.

An advisory group also objected to removal of steel strapping and other packaging materials and containers from the list of products which consumers can obtain by using DO 97 orders for maintenance, repair and operating supplies. his restriction was placed in April by NPA. Among other modifications, the committee said, NPA should merely list prohibited uses for steel strapping, rather than detailed lists of permitted uses.

Cellophane Controls

If the production of cellophane, already in short supply, continues to be hampered by insufficient quantities of materials, then controls over the distribution of cellophane may be necessary, the NPA informed the Flexible Plastic Container Industry Advisory Committee.

NPA explained that sulphur, which is essential in the manufacture of cellophane, will continue to be scarce because no new deposits have been brought in to augment last year's pro-

IMAGINE...

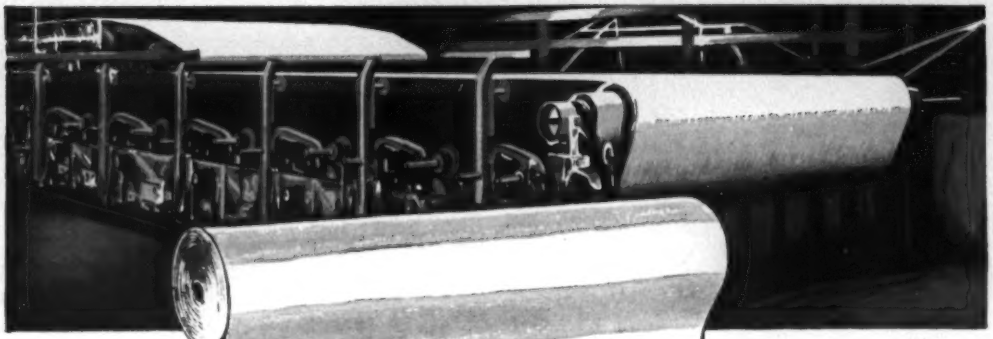
America without paper!

No wraps . . . no bags . . . no cartons! Imagine the consternation of Mrs. America at market. Not only would *convenience* vanish . . . but the miracle of American merchandising and marketing methods would disappear almost instantly. Orders, shipments, store stocks . . . all in a state of chaos. America's standard of living . . . and the nation's health . . . would be severely affected . . . the nation's strength and security threatened. *Unthinkable?* Don't take paper for granted. Anything so vitally basic should be thought about . . . and safeguarded. Paper is essential! Use it wisely . . . protect its production . . . to keep America strong.

America depends on PAPER

PREPARED IN THE PUBLIC INTEREST BY BELOIT IRON WORKS, BELOIT, WIS.
MAKERS OF HIGH-SPEED, HIGH-PRODUCTION PAPER MACHINERY SINCE 1858

CAN YOU USE REPRINTS? This is one of a series of



For BRIGHTER...

HIGHER WAX TEST...

MORE WATER RESISTANT...

STARCH-CLAY PAPER COATINGS

use P-364-A BECKAMINE

Here is a resin that pays off in sky-high quality at down-to-earth cost! RCI's P-364-A Beckamine improves the brightness, wax test and water resistance of starch-clay paper coatings and is economical besides—normal applications require only 20% resin solids content, based on dry starch! P-364-A can be used with the three starch types most often employed as binders in clay coatings . . . enzyme converted, acid hydrolyzed and oxidized . . . and may be added to the starch during the cook, at top heat as a chillback, or to the cooled finish adhesive. This liquid urea-formaldehyde resin is also being widely used in the waterproofing of starch adhesives employed in the manufacture of fiber containers. For further details and a working sample write the RCI sales department in Detroit.

REICHHOLD CHEMICALS, INC.

RCI

General Offices and Main Plant, Detroit 20, Michigan

Other Plants:

Brooklyn, New York • Elizabeth, New Jersey • South San Francisco and Azusa, California • Tuscaloosa, Alabama • Seattle, Washington • Chicago, Illinois Liverpool, England • Paris, France • Sydney, Australia • Sassenheim and Apeldoorn, Holland • Naples, Italy • Buenos Aires, Argentina • Hamburg, Germany Toronto and Port Moody, Canada • East London, South Africa • Osaka, Japan • Vienna, Austria • Gothenburg, Sweden • Zurich, Switzerland

SYNTHETIC RESINS • CHEMICAL COLORS • PHENOLIC PLASTICS • PHENOL • GLYCERINE PHTHALIC ANHYDRIDE • MALEIC ANHYDRIDE • SODIUM SULFATE • SODIUM SULFITE

duction. Military requirements have risen, and in addition, about 17 percent of the estimated 1951 sulphur output is earmarked for export, NPA said. Unless some way is found to overcome the shortage, control over cellophane may be inescapable, it was stressed.

NPA also explained to the committee that June allocations of polyethylene, a plastic used in the manufacture of such items as food cartons, plastic bags and allied articles, were made on the basis of 50 percent for military needs, 34 percent for essential categories and 16 percent for the open market. The committee expressed satisfaction with NPA's allocations.

An NPA-appointed task force reported on a study made of waste factors in converting and made recommendations for standards to be applied to various converting operations. At the same time, another task force announced it will soon make recommendations for conservation of critical materials within the industry.

Sulfur Order M-69

The NPA ordered sulfur suppliers to ship sulfur only when authorized by NPA, and limited sulfur users to 100 percent of last year's rate of consumption.

NPA said issuance of Order-M-69 was necessary because at the present rate of use there simply isn't enough sulfur to go around.

The use restriction becomes effective immediately. The authorization to suppliers will begin July 1.

Although buyers are not required to get NPA authorization to purchase sulfur, it is necessary for them to make monthly reports to NPA on their uses of it and their inventories.

The system will operate in the following fashion:

Before the first of the month preceding the calendar quarter in which shipments are to be made, a supplier will file with NPA a form, NPAF-99, listing his proposed shipments for the quarter. NPA will examine this application, asking whatever adjustments are required, and will return the form to the supplier at least 10 days before the quarter begins. He is then authorized to make the shipments.

(For the quarter beginning July 1, the supplier should apply for authorization immediately. He will be permitted to make the proposed shipments while the form is being returned to him.)

Beginning this month, a user of sulfur will make a monthly report on or before the 28th day of each month. He will report on NPAF-98 his use of sulfur during the preceding month and his inventory at the close of that month. He will also estimate his uses during the current month and estimate what his inventory will be at the end of it.

NPA said this report on usages would enable it to get an accurate, detailed picture of the products requiring the use of sulfur and the amounts consumed for each.

A supplier may ship 60 short tons or less of sulfur each quarter to a user without authorization. Any user who consumes 20 short tons or less a month is not required to make monthly reports.

The order also provides for special adjustments when seasonal requirements make the 100 percent monthly use restrictions impracticable.

Inventories are restricted to a quarterly use total unless otherwise specifically directed by NPA.

Production last year reached a peak of 5,192,184 long tons, an increase of 148 percent over 1939 and an increase of 38 percent over the peak years of World War II.

NPA is now granting certificates of necessity to plants which are converting to pyrites burners and other sources of sulfuric acid, and is discouraging construction of plants which require sulfur burners.

Waste Paper Control

Because supplies of pulp wood are becoming scarcer and imports of foreign pulp are in all probability going to decline further, the NPA advised the Waste Paper Dealers Advisory Committee that it is preparing an order limiting the use of pulp in paper manufacture.

Discussing the proposed limitation, the committee pointed out that such an order would be ineffectual unless the use of certain types of waste paper, which can be substituted for pulp, is similarly limited.

The committee contended that, like pulp, there is only so much of these types of waste available and that, unless controlled, it would soon become exhausted. Substitutes for pulp include certain grades of white envelope cuttings, craft and manila cuttings, corrugated cuttings, tabulating cards and similar waste, the committee explained.

NPA was further advised that the waste paper dealers would be put virtually out of business unless certain toll agreements, commonly made between mills and paper manufacturers, were "frozen" in accordance with the first six months of 1950, the base period. The committee recommended control on this basis.

NPA agreed to take both recommendations under advisement.

Ways and means of conserving and reclaiming waste paper also were discussed. The committee suggested that a plan be readied on a regional basis by which dealers could spur reclamation in case of an emergency in any section of the country.

A. M. Howe, of NPA's Pulp, Paper and Paper Board Division, presided.

These committee members attended: J. A. Benedetto, D. Benedetto, Inc.; Haskell Stovroff, Buffalo Waste Paper Co., Inc.; Jean B. Charak, Federal Paper Stock Co.; Kenneth Winter, Ft. Wayne Waste Paper Co.; Paul Joseph White, Great Eastern Packing & Paper Stock Corp.; F. F. McClintock, Independent Paper Stock Co.; Maurice M. Marcus, Marcus Paper Co.; David M. Dickson, Penn Paper & Stock Co.; Stuart B. Sutphin, Jr., The I. V. Sutphin Co.; Philip Troiano, Troiano and Defina; Harold Shilling, U. S. Paper Supply Co.

Supply of Lab. Equipment

Ample production of laboratory equipment to meet current and future needs—provided manpower continues sufficient—was forecast by the Laboratory Apparatus and Supplies Industry Advisory Committee at its first meeting with the NPA.

Production facilities have been greatly expanded since the Korean outbreak, committee members stated, and even greater output could be attained by using additional work shifts.

Although difficulty was reported by some industry representatives in procuring cobalt, nickel, copper, aluminum extrusions, zinc castings and components such as fractional horsepower vacuum pumps, production has not been material retarded, they said.

Essentiality of laboratory apparatus and supplies to defense-supporting industries such as chemicals, rubber, plastics and synthetic fibers, textiles, metal producing and processing, petroleum and to research and education will be recognized under the Controlled Materials Plan.

Makers of laboratory glassware and porcelain-ware stated they are swamped with defense-rated orders for operating supplies (DO-97), making it difficult for them to fill direct defense orders promptly.

No limitation order is now under consideration for the laboratory equipment industry, NPA officials told the committee, as greater production of this apparatus is desired.

Warns on Industry Advisory Committees

WASHINGTON, D. C. — The Justice Department thinks mobilization agencies would do well to keep trade association executives off their industry advisory committees, although it has no legal objection to their membership.

Converter Price Regulations

Converters of paperboard, who manufacture any commodity therefrom, and who cannot determine a base period price under section 6a, b, or c of CPR 22 may use his pricing formula in effect during the base period to satisfy the "price list, catalog" requirement. Such pricing formula must have been in writing or contained in a price list, etc., which reflected his material cost margin of conversion and delivery charges.

No New Credit Restrictions

OTTAWA — Canadian pulp and paper industry is greatly relieved now since Finance Minister Abbott disclosed in Parliament here that the official Bank of Canada and the general managers of the chartered banks across the nation met to review the effects of the restrictions on credit but no new restrictions were devised. This ended rumors that new restrictions were coming shortly.

Mill and Merchant Relationship

Charles Canfield[1]

This is a tough subject because the relationship is all tangled up, something like your second cousin marrying your wife's sister-in-law. You can't explain the relationship.

Back in the days when the per capita consumption of paper was about a pound per year, there were no Sears Roebuck catalogs and the corn cob was a household necessity. Life was simple and so was the paper business. There was a book paper for printing and a writing paper for writing. Both were 100 percent rag, hence no shortage of sulphite or sulphur in those days. A printer who needed paper just got out the old wheelbarrow, went down to the mill, stocked up, and pushed it home. There were few if any merchants, no mill salesmen and nobody played golf.

The invention of the Fourdrinier and the idea of using wood fiber in place of rag started an era of volume production and the use of paper has increased by leaps and bounds ever since. Increased production created a need for paper salesmen, a strange animal who talks, eats, drinks, and dreams paper all day and most of the night.

I think salesmen are mainly responsible for the tremendous growth in the use of paper. It was surplus tonnage which had to be sold that created new markets rather than new markets creating more production of paper.

As the manufacture and use of paper increased, as more and more mills were built and as the population spread out over the country, there became a much greater problem of distribution. Merchants came into being, mostly located in the bigger cities. They bought from mills and sold to the public. Each merchant built up his own lines, had them made to order, stocked them and sold them wherever he could at whatever price he could get.

In those days we merchants really bought and sold paper. We would get out the best sample we could find, would reverently display it on a blue velvet cloth, admire its marvelous finish and texture, its brightness and brilliance of color, mentally add on a half cent to the price for luck and cut that price a quarter of a cent in order to walk off with the signed order. We'd lock the order in the office safe for fear our competitor would find out about it and then we would call up five mills to see who wanted it badly enough to give us another half a cent profit. In placing the order we would automatically pad it by about 10 percent, the mill would, too, and then would proceed to overrun the quantity and underrun the basic weight. The customer howled to high heaven about the overrun and underweight, probably got a small adjustment and everybody was happy. Them were the days! It was a free world and wide open. Mill and merchant relationships were extremely casual, a little cool and sometimes strained.

Likewise, a merchant who sold his own brands could buy them where he pleased. No one was supposed to know who made them or who bought them, what they were made of or how they were made. Everything was a deep dark secret. Technical knowledge was scarce, was jealously guarded and rarely shared. It was everybody for himself and the devil take the hindmost.

After the first world war, things began to change. Slowly but surely the idea of standard mill brands, nationally advertised, and nationally distributed became popular; that and the idea of packaging a product. These two ideas revolutionized all business including the paper business. Printing grew by leaps and bounds. So did the use of paper. Paper consumption rose from 5½ million tons in 1914 to 13½ million in 1938 to 19½ million in 1944 and now is booming along at the rate of about 29 million tons per year.

Now, you can't make 29 million tons of paper by hand or distribute it on a wheelbarrow. The machinery for the production and distribution of such a huge volume must be well oiled and streamlined. There has to be standard qualities, standard grades, national distribution of those grades, and a certain uniformity of price. You can make a ton of a special paper on a 50 inch machine running 100 feet a minute, but when you have big machines running at high speed it just isn't the same business.

Paper mills did standardize their products and soon discovered it was more profitable to manufacture mill brands and to sell them through distributors on a national basis than it was to let the merchants buy their own special brands at their own special prices. It was an unfortunate discovery for us merchants but I can't blame the mills too much. They also discovered that with their greatly increased production and their mill brands it was necessary to create a mill sales force and district offices in order to service and promote the use of their products.

This change in merchandising, this gain in power of the standardized mills and the loss of the autocratic power of the merchant has been the chief characteristic of the era between the two world wars. At times there has been quite a battle between the two factions with a certain amount of ill feeling and considerable misunderstanding. Meanwhile outside adversities which created NRA, and later on WPB, were factors that accomplished the undreamed of miracle of forcing competing mills and competing merchants to get acquainted with each other. It *was* a miracle, and horns and cloven feet disappeared like magic. We found that so and so competitor was a pretty good fellow and made the amazing discovery that he has exactly the same problems that we have. It was high time that we did too, because as the curtain goes up on the next act, we are about to play an entirely new role.

Right now we are all messed up with mill lines, standard brands, allocations, pulp shortages, government orders and government regulations, M 36's, price ceilings, black markets, quotas and alphabetical controls. Just about the time we think we have sold an order, have jockeyed it through our company's allocation system, and in 90 days may possibly collect a commission, the boss horns in and gives the tonnage to some friend he met on the train. Sometimes it seems as if we should have stood in bed, or should retire to the farm, or jump off the George Washington Bridge or something, but I don't think so . . . at least I don't think so this noon.

I think that we are coming into a brand new era; one where for the first time paper will be fully recognized as the mighty important factor in our economy that it is. It plays a vital part in the production and distribution of everything. You can't do business or manufacture articles, or build a battleship, or ship anything without a lot of paper being involved. You can't sell anything unless it is backed up with paper. Paper is used to plan production, to sell the manufactured article, to package it, to bill it, and to pay for it. There are today literally hundreds of grades and thousands of items, many with special features, made to order to fulfill special requirements. Such requirements call for paper built for a purpose. Any old thing won't do. Our industry and the printing industry has become extremely complex, so much so that experts are required to properly choose the right grades, to supervise their use and to interpret consumers' specifications to the mills.

[1] President, Canfield Paper Co. At S.A.P.I. Luncheon, Hotel Beverly, New York, N. Y., May 24, 1951.

Believe it or not, you men here, you mill and merchant salesmen are the experts. Maybe your customers, your bosses, and possibly even yourselves don't realize it. But if you aren't, who is? And if you aren't, you had better start to become one, because that is the new order of selling.

There aren't any secrets any more. You all know where most of the business is, who has it, who makes it, how it is made, and probably the price it sells for. If you don't know, and you haven't a better way of finding out, all you have to do is to call up your competitor and ask him. Your customer also knows. He knows the standard grades and standard qualities of all the leading mills and in ordinary times he knows the prices, too. Because of all of this common knowledge, you can't kid anybody, you can't pad orders, and you can't fool with qualities. It might seem as if there weren't much selling left for us paper salesmen, but there is —more than ever.

Back in the old days, we had 78 inch paper machines, making book paper at 250 feet per minute or less, to be printed mostly in one color on small flat bed letter presses running 1500 or 1800 sheets per hour. There was not much color work being done. Recently I saw a paper machine trimming over 220 inches and running 1200 or more feet per minute, making darn good coated paper on the machine. Later, I saw this paper running on a four color offset press, sheet size 52 by 76 with a rated speed of 6000 sheets per hour, and an actual speed of 4500 or 5000. You can make a lot of paper on such machines. You can chew it up fast and produce a lot of printing on such presses — IF! If everything runs smoothly. The trouble is that everything HAS to run smoothly, or there is a whale of a bill for someone to pay. Those machines and the highly trained men required to run them cost a lot of money, and they have to be kept producing, or else!

In this new era, this post World War II high speed era, a new technique of selling is required. Price of paper has to be secondary. *Reliability* —reliability of product, of information, of source of supply, comes first. That is what you are going to sell, and you will have to be equipped to furnish it. Everyone — consumers, printers, merchants, salesmen, and mills will have to work together, pooling their technical information, cooperating all along the line in order to do a proper job of turning out this tremendous tonnage of paper and processing it after it is made.

We *must* get together — not in defiance of the Federal Trade Commission, but in self protection. Our forefathers in the paper trade would whirl and spin in their graves to see mill salesmen, buyers, print shop superintendents, and merchant salesmen all sitting down together to discuss complaints, troubles, new processes, improvements—all of our mutual problems. But today it is out of these discussions that orders come. We know a lot more than we used to about the techniques of the manufacturing and processing of paper, but we are going to have to know a lot more than we do now to keep out of trouble.

To summarize: I believe this about mill and merchant relationship—Years ago we used to expect to match wits against each other and let the buyer beware. Today it is let the SELLER beware! Mills and merchants are both the sellers, with "dat ole debbil" high speed production breathing down their necks. They have a common and mutual problem. They must sell paper economically, and they must be sure it works economically. A cut price, or a fast line of talk, will no longer be enough. Technical knowledge and the aforementioned three R's — Reliability of product, Reliability of source of supply, and Reliability of information are now all important. Our combined expert knowledge of what to buy and what to use to minimize trouble and to keep the wheels turning at full speed is what we have to sell. We have GOT to be a team, with two heads better than one. If we can be—the sky is the limit.

AUSTRALIAN NOTES

Timber from New Zealand mills has produced 28 lb. newsprint, of a strength 50 percent greater than that of Canadian newsprint, at a rate of 1,400 ft. per minute, said N. Z. Director of Forestry A. R. Entican, when interviewed recently. "New Zealand's newsprint potential is at least 100,000 tons a year," he added, "and overseas interests have now been invited, provided they have adequate finance and technical resources, to cooperate with the New Zealand Government in developing large sawmill projects, with pulp and paper plant, the primary product of which will be newsprint. The total cost of the plant will be £16 million, and the Government is also planning to spend £14 million on public works such as harbors, roads and railways to aid the industry."

* * *

D. Henry, managing director of New Zealand Forest Products Ltd., says that when his company's mills now under construction are completed, sufficient kraft pulp and paper will be manufactured for the country's requirements, leaving a substantial surplus for export. "About a year ago," he adds, "the price of Swedish kraft paper c.i.f. Auckland was £57 a ton, today it has more than doubled at £127 a ton."

* * *

The fact that during the first eight months of the current financial year Australia had a favorable trade balance with dollar areas of £25,072,000 compared with the unfavorable balance of £5,403,000 for the same period last year (an actual improvement of more than £30 million) makes importers here hope that before long there will be more open trading with the United States.

METAL PRINTING PLATES

In a move to further conserve supplies of copper, aluminum, zinc, chromium and nickel, the National Production Authority, U. S. Department of Commerce, has issued an order to effect the recovery of obsolete metal printing plates.

The Order, M-65, limits the time such plates can be held by various types of printing establishments. It defines the notice to be given plate owner, outlines the method of disposal and provides penalties for non-compliance.

Excepted from provisions of the order are plates made of lead, tin and antimony.

The order says a plate shall be deemed "obsolete" if, on April 1, 1951, or on the first day of any calendar quarter thereafter, it has been in existence for the period specified below and has not been used during that period:

(1) Newspaper printing—1 year.
(2) Magazine and periodical printing—1 year.
(3) Book printing—4 years.
(4) Container printing—1 year.
(5) All other categories of printing —2½ years.

The order provides, however, that a plate shall not be deemed obsolete at any time when the person holding it knows there is a specific and assured future use for it.

JUNE NICKEL ALLOCATION

The National Production Authority, U. S. Department of Commerce, acted today to assure a continued supply of nickel for important civilian requirements.

This is being done, NPA said, by earmarking approximately 20 percent of the total supply of the scarce metal for non-defense uses.

Permission to use nickel in definite amounts to fill non-rated orders during June was granted by NPA through approval of certain scheduled meltings reported by users of the metal in "melt sheets" submitted to NPA in May.

NPA said that the amount of nickel for non-rated orders, as distinguished for defense rated (DO) orders, is approximately the same for June as the authorized consumption of the metal for similar purposes during May.

Suppliers of molybdenum, another scarce alloy for steel, were directed to provide steel producers with 35 percent of their scheduled civilian requirements for June.

NEW ALBERTA PULP MILL

EDMONTON, Alberta — Lands Minister N. E. Tanner has announced that a pulp mill, costing between $3,500,000 and $5 million will be built at Yales, Alta., five miles east of Edson and 125 miles west of Edmonton.

An agreement has been signed by the Alberta government and North Western Pulp & Power, Ltd.

Maintenance— IV of Series

How To Get Most Service From Rubber-Covered Rolls

Alfred C. Lutz[1]

Rubber doesn't last forever.

Even special compounds designed to give best service on a special job eventually wear out in use. That happens, too, to rubber-covered rolls used in the paper industry.

In this time of national emergency, however, the distressing fact is that so few rubber products used in industry are given a real chance to serve throughout the life span originally built into them.

A proper regard for the selection, installation and maintenance of rubber-covered rolls, for example, will result in worthwhile savings in time, money and—more important that this time—the conservation of the nation's critical rubber supply.

Here's a quick check list to follow in order to get most service from rubber-covered rolls.

[1] Rolls Sales Eng., Industrial Products Div., B. F. Goodrich Co., Akron, Ohio.

Design cores strong enough to withstand the loads involved.

Provide adequate bearing surfaces on the journals.

Use smooth drives, free from gear chatter.

Keep bearings adequately lubricated.

Static balance all cores.

Where vibration is a critical factor, dynamically balance all cores operating at surface speeds over 700 feet per minute.

Store covered rolls in a cool, dry and dark location. Always support on journals.

Regrind rolls that require smooth, accurate surfaces immediately prior to use, if they have been stored for one year or more.

Use cover compounds of the correct hardness for loads and speeds encountered.

Don't expect a given rubber cover to perform well in all services because it has done well in one.

Grind rolls at regular intervals to insure correct crown and prevent development of corrugations. Once corrugations develop, more rubber must be removed to return the roll to workable condition.

Don't grind rolls until shortly before roll is to be installed. This insures proper crown since it prevents oxidation of the surface and sagging of the cover, which may develop in storage.

Reduce quantity of oil in foam killers to a minimum. Oil attacks rubber; causes it to soften and lose crown; results in more rapid deterioration and more frequent grinding.

Don't lift rolls with crane cables around the rubber. Lift from the journals with adequate protection to prevent marring bearing surfaces.

Often, by selecting proper roll hardness, a paper-mill operator can offset waste elsewhere. If the cost of steam is abnormally high, the press rolls probably are not doing their jobs satisfactorily. If the steam cost is high but the felts wear longer than would normally be expected, the press rolls are probably too soft.

Where the fuel costs are higher than average, press rolls should remove as much water from the paper as possible before steam is applied for drying. Where fuel cost is below average, it sometimes is an advantage to use softer rolls, regrind them frequently and depend upon steam to remove a considerable percentage of water.

Cost of removing a pound of water from paper with steam is about 25 times as great as with rubber-covered rolls. Sometimes the total drying cost can be varied 40 percent simply by varying the hardness of drying rolls.

It pays to remember that such factors as differences in wall thickness and methods of applying journals influence the amount of roll deflection. Increased deflection requires greater crown. Cores rethreaded repeatedly for hard rubber base gradually become thinner walled, thus requiring an increased cover crown.

Covers made with rubber of uniform density will not have softer areas to cause damp streaks while the harder spots take the pressure of the top roll.

This press roll operated under too high a pressure for the grade rubber used. Marking on roll surface is characteristic of excessive loading for soft rubber. A harder stock would carry the pressure better. Approximately 50 per cent of this roll's normal service life was wasted. Proper selection of product would have eliminated this waste.

These potential trouble spots can be avoided entirely through careful selection of product. A roll covered with rubber of uniform density will hold its crown with satisfactory uniformity.

For a given lever weight, a soft roll cover requires slightly greater crown than a harder cover. If rubber density from end to end varies by no more than three or four points, the roll will hold its crown with satisfactory uniformity. When density varies by five or more points, a different crown is required.

Alteration of press roll crown often will improve the efficiency of older paper machines. When the paper dries too fast or too slowly at center or edges, adjusting the driers or other parts may not suffice. In such a case, the press roll crown should be altered to provide proper control.

Older machines often are speeded beyond their rated capacity without increasing drier capacity. More water must be removed at the wet end by adding more weight to the press levers. This causes greater roll deflection, necessitating an increase in crown.

Good roll balance, plus ball or roller bearings, gives maximum roll performance through reduction of vibration. Unbalance causes wobbling or oscillating. Vibration from unbalance shortens rubber-covering life and damages bearings and other parts of the machine. The rubber cover of a press roll core that is out of balance may develop a flat spot across the face or separate from the core. This also happens if the top roll is out of balance.

This extractor couch roll was run too long before grinding. Abrasive wear by felt and water accelerated grooving at the end after groove had started. Approximately 25 per cent of this roll's normal service life was wasted. If slightly harder stock had been used at outset, roll might have given longer service.

Static balance is used chiefly for rolls which operate at less than 700 surface feet per minute. Dynamic balance is used for rolls operated at more than 700 surface feet per minute.

For maximum smoothness of operation, a roll should be balanced dynamically at operating speed. Static balance is no indication that the roll will be dynamically balanced, particularly at high speeds.

Failure of a Pulp Mill Digester*

W. T. White[1]

This paper deals with the failure of a mild steel pulp digester which was operated by the Australian Paper Manufacturers Limited, at their pulp mill, Maryvale, Victoria, and which had been used for the pulping of eucalypt chips by the kraft sulphate process for 7½ years.

It is considered that the failure was initiated by the use of mild steel liner plates, welded into position inside the bottom and top cones to avoid corrosion and abrasion of the digester walls.

The history of the vessel, the method of lining and a suggested mechanism of failure are outlined.

* Presented at the Fourth General Conference of the Australian Pulp & Paper Industry Technical Assn.

[1] Chief Metallurgist, Australian Paper Manufacturers Ltd. Full Member, APPITA.

Introduction

Digester History

Until June, 1941, Australian Paper Manufacturers Ltd. operated three 2,000 cu.ft. Class 1 digesters which had been fabricated in England. Arising from the demands of war and of natural expansion, a fourth digester was placed in service during June, 1941. This vessel, which was known as No. 4, was virtually identical with the original three except that it had not been stress-relieved and had been made by a local engineering firm.

As shown in *Figure 1* it was approximately 30 ft. long by 10 ft. diameter, and was constructed of flanging and boiler quality steel, butt-fusion welded.

During construction the usual mechanical tests of the steel and the welds were made and proved satisfactory. A hydraulic pressure test of 240 lb./sq.in. was applied and the vessel then certified as a Class 2 vessel with authorized working pressure of 120 lb./sq.in.

Before the digester was placed on the line the interior walls were sandblasted to remove the mill scale. This procedure was considered advisable to prevent localized corrosion of the shell which would occur at the breaks in the mill scale layer owing to the cathodic nature of mill scale in contact with steel.

Operation of Digester

Typical operational details of the vessel were as shown in *Table I.*

TABLE I
OPERATIONAL DETAILS OF NO. 4 DIGESTER

(A) Temperature and pressure schedule

When digester was started from cold it was slowly raised to approximately 160° C. and held at that temperature for approximately 1.5 hr.

Cycle for warmed digester—

(a) Charged with chips and liquor
(b) Vessel lid bolted into position, liquor circulated through heater and vessel thus raised to 170° C. and 80 lb./sq. in. in 1.5 hr.
(c) Held at this pressure and temperature for 1.5 hr. while circulation of liquors and cooking proceeded
(d) Charge blown through bottom discharge orifice; pressure reduced to atmospheric in approximately 15-30 min. (temperature of vessel then approximately 70° C.)
(e) Digester recharged with chips and liquor; cycle repeated

(B) Typical charge

1. Wood chips 12.65 tons o.d. basis (moisture content approx. 60%)
2. White liquor 700 cu. ft. per cook
3. Black liquor 385 cu. ft. per cook

Details

Wood chips (normally)

50% *Eucalyptus regnans*
50% mixed eucalypt species

White liquor (routine analysis)

Total alkali	6.78 —as lb. Na_2O/cu. ft.
Active alkali	5.59 —as " " " "
NaOH	4.42 —as " " " "
Na_2CO_3	1.19 —as " " " "
Na_2S	1.17 —as " " " "
Na_2SO_4	0.21 —as " " " "
NaCl	0.25 —as " " " "
SiO_2	0.058—as " $Na_2Si_4O_9$/cu. ft.
R_2O_3	0.006—as " R_2O_3/cu. ft.
Sulphidity	20.9%
Activity	82.4%
Suspended matter	0.012%

Black liquor (routine analysis)

Solids 16-18% — Sodium-lignin complex compounds; Sodium carbonate; Sodium sulphide; Sodium thiosulphate

Ash 8-9%
Sulphated ash 10-11%
Ratio: Ash/solids 43/46%
Concentration of residual alkali at completion of blow: 1.3 lb. active alkali as Na_2O/cu. ft.
The total number of cooks during life of digester: 7,636
Total production hours: 26,083

General

While making a routine inspection at the pulp mill during 1942, metallurgists observed that corrosion of the digester walls was occurring; this was confirmed by drilling holes (¼ in. dia.) through the shell and observing the actual corrosion loss by direct measurement. Frequent inspection and drilling showed that the rate of loss was approximately 3/64 in. per annum, and by July 1945 (4 years of operation) the walls had been thinned by amounts ranging from ⅛ in. to 3/16 in.

Correspondence with oversea specialists showed that this represented a greater corrosion rate than that experienced with kraft digesters in use abroad; this was attributed to the physical and chemical nature of the eucalypts which were being pulped.

Table II shows the results of a corrosion test of 12 months' duration, in which the samples listed were suspended in a digester liquor heater; hence they were not subjected to abrasion by wood chips.

It was thus concluded that unless steps were taken to reduce the thinning of the digester shell, it would be compulsory to use the vessel at a lower working pressure.

An immediate precaution taken to minimize corrosion was to leave digesters empty of chips during shut-down periods and to continue to vent continuously during the cook and so avoid corrosive gases and oxygen if present. Subsequent thickness measurements showed that this practice did slightly reduce the corrosion rate.

Three courses were available to prevent having to reduce the working pressure because of progressive thinning of the digester wall:

(a) to remove completely the worn cones and replace them with new sections;
(b) to line the vessels with either mild steel or stainless steel wearing plates;
(c) to continue operating the digesters until they were "worn out" and then replace them.

It was finally decided that installation of mild steel lining plates appeared to offer the quickest and most easily effected solution. This decision was of course influenced by the abnormal war time conditions applying as regards supply of new vessels or parts thereof.

To line the vessel it was planned to use ⅜ in. plates for the bottom cone and ¼ in. plates for the top cone; the barrel or body of the digester was not to be lined at this stage as it was of heavier section and did not appear to be so greatly affected.

The possibility of caustic embrittlement or stress corrosion defects occurring at some future date was considered and discussed at some length; but it was considered a fair risk to proceed with lining, particularly as the cooking liquors were saturated with tannates which it was considered would function as inhibitors. This view was strengthened by advice from an oversea firm giving details of the successful use of similar mild steel linings as wear plates in the bottom cone of a digester.

Lining of Digester and Subsequent Failure

Lining Details

The initial method used to affix the lining plates was as shown in *Figure 2*. Liners of the maximum size that could be passed through the restricted man-hole of the digester were used. They were all drilled with ⅜ in. holes on 9 in. to 6 in. centers for plug welding and were seam welded as illustrated.

The lining of the bottom cone of the No. 4 Digester was completed in September 1945, and the vessel was then subjected to an hydraulic test, and placed in service.

TABLE II
BLACK LIQUOR CORROSION TEST—NO. 1 DIGESTER LIQUOR HEATER
August 1945-1946

	Loss of weight, g./sq. m./24 hr.	Average penetration, in./year
After 12 months' test		
Ingot iron	2.5	0.0046
Corten	1.8	0.0033
Satinex	2.1	0.0039
Mild steel	4.1	0.0076
Armco iron	2.7	0.0050
Lyco	3.0	0.0055
3% Nickel steel	1.0	0.0019
5% Nickel steel	0.80	0.0015
Welded Weldanka stainless steel (unpolished)	0.32	0.0006
Welded Weldanka stainless steel (polished)	0.27	0.0005

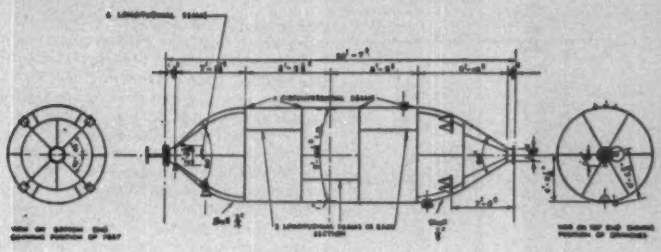


Figure 1—Details of No. 4 Digester

The top cone liners were installed at a later date (August 1946).

During the first few cooks after fitting the bottom liners, one or two sharp reports were heard and it was thought this indicated that some plug welds had broken away from the shell. After being two days in operation the vessel was taken off the line and a close examination made of the lining plates. All visible welds appeared sound although tapping with a hammer revealed that some plug welds had apparently pulled away from the shell.

The plates had been preformed to the shape of the vessel walls and were jacked into position during welding in an endeavor to obtain a snug fit.

The vessel was again returned to operation and inspection three months later revealed no visible change.

During September 1946 some bottom cone plug welds were found to have cracked and liquor was found behind a few plates. To effect repairs the liquor was dried out with an oxyacetyline torch and the faulty plug holes elongated to a length of 1¼ in. and rewelded; at a later stage when seam weld cracks appeared, they were gouged with a pneumatic chisel and rewelded.

From the date that the first small defect appeared the lining was inspected frequently and over the next three years a continuous amount of similar maintenance work was required.

In view of these defects the work of lining other digesters was suspended, although by this time a number of digesters were partly lined. In lining these latter digesters, however, the plug holes were made larger, i.e., instead of ⅞ in. dia. they were elongated giving a hole ⅞ in x 1¼ in. This was considered essential as the round holes used previously did not permit a good weld to be made.

This modification improved the fit of the plates, but it was soon observed that the other digester linings also were leaking.

During 1947, a piece of lining plate was removed from a digester to ascertain the effect on the shell plate of liquor which had leaked past the liner; no defects were noted, although slight general corrosion was apparent. It was thus considered that damage of the No. 4 digester shell by cooking liquor could be obviated by the above procedure, i.e., drying out and repairing leaking plugs and seams.

Drill tests were taken of shell and liner plates and it appeared that wastage of the shell had been reduced, for after the lining had been in service for two years the bottom cone of the shell had lost only 1/64 in. owing to corrosion by liquor seeping past the liners and the lining plates had lost 3/32 in. due to abrasion and corrosion.

By this time a satisfactory technique had been selected for the lining of digesters with stainless steel and hence further mild steel lining was abandoned. The policy then was to use No. 4 with continued maintenance, i.e., drying out liquor and repairing leaks until at the earliest opportunity it could be taken off the line, stripped of lining plates and lined with stainless steel. This would mean lost production unless it was carried out after new vessels were installed and it was planned to use the vessel until this had been arranged.

However, before this could be effected, failure of the No. 4 digester shell occurred.

Failure

On January 14, 1949, the digester

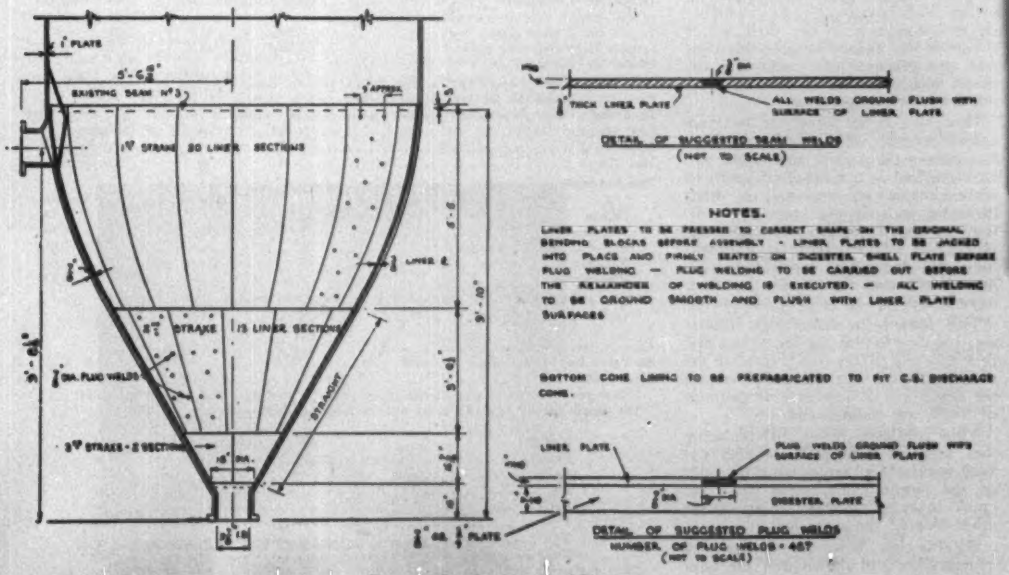

EXISTING SEAM N°3
STRAKE 20 LINER SECTIONS
STRAKE 13 LINER SECTIONS
STRAKE 12 LINER SECTIONS
DETAIL OF SUGGESTED SEAM WELDS
(NOT TO SCALE)
NOTES.
BOTTOM CONE LINING TO BE PREFABRICATED TO FIT C.S. DISCHARGE CONE.
DETAIL OF SUGGESTED PLUG WELDS
NUMBER OF PLUG WELDS = 487
(NOT TO SCALE)

Figure 2—Details of Lining of Digester

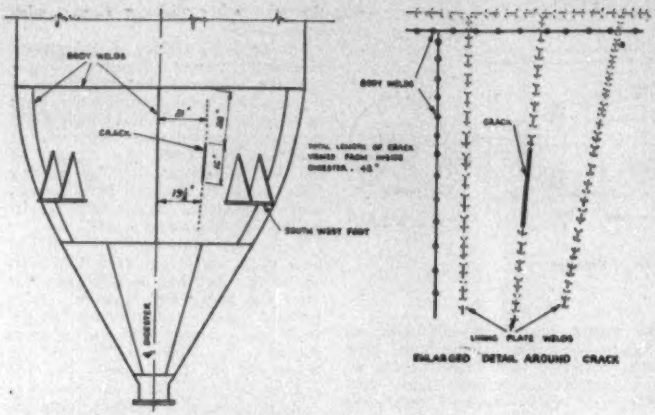


Figure 3—Position of Initial Major Crack

operator noticed steam leaking from the bottom cone of No. 4 digester in the proximity of the southwest supporting foot. The vessel was taken off production immediately, and thoroughly inspected. It was found that a vertical crack had penetrated the shell for approximately 16 in., but on removal of lining plates the crack when examined from inside the vessel had a total length of 42 in. of varying depth. It was located as shown diagrammatically in *Figure 3*.

As the crack was close to a leg pad and as the shell plate on one side of the crack had sprung out relative to the other side of the crack, it was thought that the placement of the leg fitting had given rise to a highly stressed condition in the shell, which condition had caused failure; this view was strengthened by reports that the vessel had occasionally vibrated during the blowing operation.

However, in an effort to ascertain quickly whether or not the lining plates had caused the failure the vessel was radiographed in a number of positions around the bottom cone and the other three leg pads, in corresponding positions to that in which the crack appeared. A 220 kv. portable unit was used and from this work the technicians reported that "these positions were considered to be free of cracks."

This led to the belief that failure was peculiar to the one leg fitting and that only one defect was present in the vessel. It was thus decided to repair the vessel and an intensive programme of work was commenced.

This consisted firstly of replacing that area of shell plate bearing the fault and later of replacing a quadrant of the bottom cone, when a second crack appeared adjacent to but on the other side of the same leg.

By this time, however, metallurgical examination had shown that the liner plates had at least initiated the failure and it was recommended that all liners should be removed from the digester as it was considered that many more defects would be present in the shell.

On removal of lining plates, this was found to be so, and it was also found that a number of cracks were in positions which had been radiographed but unfortunately had not been revealed by this method. (See *Figures 4, A.B.C.D.*)

From the metallurgical work and visual examination it was considered that most defects would be shallow and in a further effort to save the vessel the cracks were gouged out with a pneumatic chisel and the grooves so formed rewelded.

This practice did not prove completely satisfactory and upon the discovery of a third fairly deep crack the vessel was withdrawn from service by the Chief Mechanical Engineer.

Metallurgical Examination and Suggested Mechanism of Failure

Observations Arising from Examination

From a complete metallurgical examination of the initial failure the following observations were made:—

(a) The steel comprising the shell plates and the lining plates was of good quality and mechanically and chemically quite sound (see *Table III*).

(b) A hard black deposit which was found between the liner plate and shell plate was shown on analysis to be similar to con-

TABLE III
METALLURGICAL TEST RESULTS

Mechanical tests

Sample 1—Taken adjacent and at right angles to base of crack
Sample 2—Taken about 8 in. from and parallel to crack
Sample 3—Taken from the sound shell plate adjacent to the shell plate which developed the crack, i.e., to use as a reference test
Sample 4—Liner plate

Sample No.	U.T.S. tons/sq. in.	Yield point	Elongation %	
Tensile No. 1 (shell plate)	28.4	19.5	13	
Tensile No. 1 (shell plate)	17.8	...	5.5	(faulty not clear of crack)
Tensile No. 2 (shell plate)	29.6	18.9	36.5	
Tensile No. 3 (reference plate)	26.8	16.2	27	
Tensile No. 4 (liner plate)	30.0	...	22	
Bend No. 1—Bent through 180° without failure (1¼ in. radius)				
Bend No. 2—Bent through 180° without failure (1¼ in. radius)				
Bend No. 3—Bent through 180° without failure (1¼ in. radius)				
Izod No. 1	22	28	31 ft. lb.	
Izod No. 2	47	31	44 ft. lb.	
Izod No. 3	61	55	45 ft. lb.	

Chemical analysis

	Shell plate, %	Liner plate, %
Carbon	0.23	0.23
Manganese	0.49	0.48
Silicon	0.087	0.060
Sulphur	0.028	0.015
Phosphorus	0.038	0.023

Spectrographic examination indicated that alloying elements were absent.
Carbon was also determined on:

	%
Another liner plate near crack	0.23
Shell plate immediately below liner weld	.22
Liner weld metal	.12

(These results indicated that contamination of the weld with carbon had not occurred)

The deposit between the two paltes had the following composition:

	%
Na_2CO_3	40.27
Na_2SO_4	2.50
NaCl	1.04
Fe_2O_3	26.57
Al_2O_3	0.80
TiO_2	0.16
SiO_2	1.13
Na_2O + organic material	5.94

(This analysis is within the range of ordinary run of mill black liquor concentrate)

Figure 4A—Radiograph of Original Crack, Adjacent to S.W. Leg

Figure 4B—Radiograph of Liner Plate Weld Immediately South of N.W. Leg

Figure 4C—Radiograph of Liner Plate Nearest to N.E. Leg

Figure 4D—Radiograph of Liner Plate Weld Immediately North of S.E. Leg

centrated black liquor (see *Table III*).

(c) The initial crack had a total length of 42 in. although the shell was penetrated for a distance of only 16 in.

(d) Most of the liner plate plug welds in the vicinity of the initial failure had been broken and a gap of up to 3/4 in. existed between the liner plates and the shell.

(e) Over most of its length the failure showed two cracks originating from either side of the liner plate weld and running at an angle of approximately 45° into the shell plate; these were termed "first-stage cracks." (See *Figure 5*).

(f) From these two defects, a "single" crack developed and ran normal to the shell plate face and caused ultimate fracture of the shell; this was termed a "final-stage crack."

(g) The first-stage cracks examined microscopically were shown to be trans-granular and were in the heat affected zone in the shell plate (see *Figure 6*); associated with them, however, some very slight inter-granular cracking was observed which sprang from the end of the initial defect (see *Figure 7*).

(h) Examination of the digester shell after removal of lining plates showed that first-stage defects had formed at positions adjacent and parallel to most of the liner plate welds.

(i) Examination of the top cone of the digester after removal of lining plates showed very few minor first-stage cracks.

(j) Upon removal of lining plates

Figure 5—Showing Crack Commencing at the Junction of Weld (A) and Liner Plate (C) and Extending into Shell Plate (B) (X4)

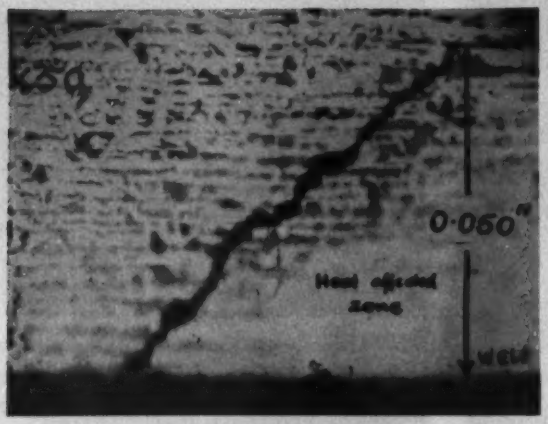


Figure 6—Showing Depth of a First Stage Crack in Shell Plate behind a Circumferential Liner Plate Weld

from other digesters it was found that two vessels lined 2 and 5 months respectively after No. 4 showed first-stage cracks whilst another vessel lined 14 months after No. 4 was entirely free of defects.

(k) The great majority of first-stage cracks appeared around the "breathing" section of the digester, i.e., the zone of greatest curvature and greatest movement of the digester (see *Figure 8*).

(m) Some liner plates showed incipient cracks as can be seen from *Figures 9, 10, 11,* and *12.*

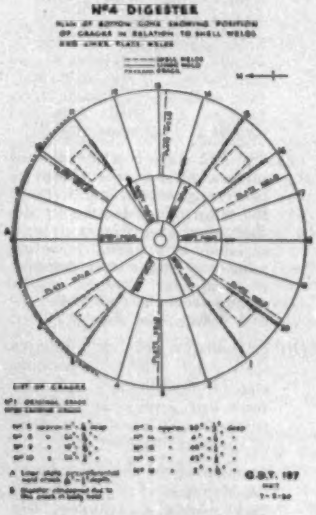


Figure 8—Plan of Bottom Cone Showing Position of Cracks

(4) in the shell plate adjacent to the liner plate weld grain growth had occurred in the shell due to the heat arising from welding.

(5) this zone of large grain size would be subjected to the above fluctuating stresses plus the corrosive effects of liquor which had leaked through cracks in liner plates and become concentrated in the crevice formed by lining plate weld and shell plate;

(6) in time, stress corrosion cracks and grooves would develop at this zone creating a notch effect and giving rise to the development of corrosion fatigue cracks which would follow the general direction of largest grain size and maximum stress. Thus first-stage cracks would be developed;

(7) the leg fittings of the digester were also placed on this section of the digester shell and as all the load of the vessel would be

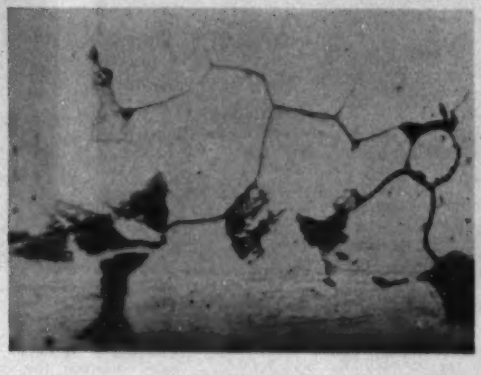


Figure 7—Showing Slight Inter-Granular Cracking at End of Main Crack

Theory of Failure

From a study of the problem, it is considered that failure was due to corrosion fatigue and the following theory of mechanism of failure is proposed:

(1) Residual welding stresses of a high order would be present in the liner plates after fitting and these stresses would be of a tensile nature in relation to the shell plates;

(2) as the lining plates did not fit snugly against the shell plate, the weight of the charge and the steam pressure would further increase these stresses. (This fact was shown by the pulling or shearing of plug welds during the first cooks);

(3) these stresses which would fluctuate in value would be transmitted to the digester shell plate over the area covered by unbroken plug welds and liner plate welds; hence these relatively small areas would be extremely highly stressed.

transmitted through the leg pads to the legs, the shell plate would be most highly stressed in the area closest to the leg pads;

(8) these external stresses would serve further to develop the first-stage cracks formed by the liner plates and the cracks most affected would be those nearest the leg;

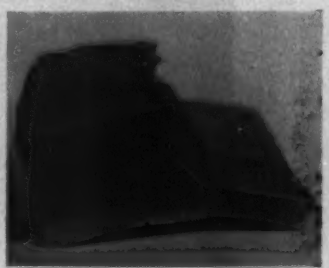


Figure 9—Section of Lining Plate and Shell Plate

Figure 10—General View of Section in Figure 9 (Trepanned) Plug taken from Centre of Sample)

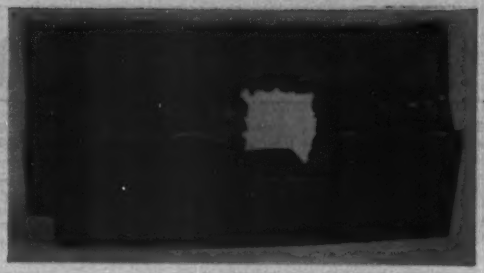


Figure 11—Another General View of Section Shown in Figure 9

(9) thus when two adjacent first-stage cracks developed until they finally ran together a final-stage corrosion fatigue crack would form and failure of the shell would occur.

It is considered that the intercrystalline cracks (shown in *Figure 7*) arose either incidentally to the corrosion fatigue failure or from simple stress corrosion mechanism due to rapid penetration and concentration of cooking liquor or the products thereof.

Comments

Top cone liners.— Cracking of the digester shell top cone was relatively slight, and this was attributed to the following:

(i) The plates used to line the top cone were thinner (¼ in.) and fitted more snugly to the shell and thus would not carry such high stresses arising from welding;

(ii) the load of the charge was not carried by these plates;

(iii) as the top cone was not in contact with liquor, easy access and replenishment of the chemicals was not possible;

(iv) secondary effects arising from the leg fitting would not be present.

Time factor.— It is interesting to note that a certain minimum period of time elapsed before first-stage cracks made their appearance (this is typical of such failures in which fluctuating stresses are involved). For example, No. 2 digester was used with internal lining for 34 months and on removal of lining slight first-stage cracking was apparent. No. 1 digester was used for 25 months after lining, and although some minor corrosion grooves were apparent no actual cracks were found when the plates were removed.

Cracks in liner plates.— The liner plates would be under similar conditions to the shell plate in regard to formation of first-stage cracks and it is believed that these conditions were mainly responsible for cracking of liner seam welds.

Lighter gauge steel liners.— It is generally considered that if wearing plates of ⅛ in. thickness had been practicable failure may not have occurred, because it would have been possible to fit the liner plates more snugly, and being of lighter section they would not have set up such high conditions of stress.

Radiographic examination.— It appears that this method of crack detection is not infallible; other methods of crack detection were also examined, i.e., electronic, magnetic, and zyglo methods. Each suffered from some disadvantage and none could be accepted as being capable of proving definitely that all cracks had been located.

Figure 12—Showing Sharp Angle at Weld Metal Shell Plate Interface at A and beginning of Small Crack in Liner Plate B

Acknowledgments

The writer wishes to thank Australian Paper Manufacturers Ltd. for permission to present this paper and also to acknowledge the fact that in its preparation he has drawn on the work of other members of A.P.M. Staff, in particular the work of Maryvale Engineering Staff, Staff Boiler Inspector, and Metallurgists J. Marion and C. Perry.

It is also desired to record with thanks the helpful constructive criticism offered by Captain A. C. W. Mears and S. C. Johnson.

WOODPULP EXPORTS RISE

OTTAWA—A general upswing in exports of woodpulp, newsprint and other paper is reported by the Canadian Government which discloses in its latest official statement that shipments out of the country of woodpulp advanced to $27,239,000 in March compared with $16,542,000 in same month last year and newsprint reached $43,274,000 in March against $37,548,000 a year ago, with exports of other paper rising to $2,866,000 in March compared with $1,255,000 last year.

In the first three months of this year, such shipments of woodpulp reached $72,799,000 against $43,837,000 a year ago and newsprint totalled $119,807,000 against $110,776,000, with shipments out of this country of other paper rising sharply to $8,357,000 compared with only $3,824,000 last year.

Likewise, imports of paper into Canada increased to $3,076,000 during March compared with $1,926,000 in same month last year and totalled $8,566,000 during the first three months of this year as compared with $5,180,000 in the corresponding period of last year.

Patent Abstracts

● *In addition to abstracts on the technology of pulp, paper and related industries, miscellaneous abstracts which may provide useful information are included.*

U. S. 2,547,871 — Closure for Paper Containers. Douglas Kirk, Hudson, Ohio, assignor to The Quaker Oats Company, Chicago, Ill. Filed July 8, 1947 — Issued April 3, 1951.

A container having an outer wall with a dispensing opening located adjacent a boundary of the wall, a closure for the opening having a depressed, cup-shaped portion insertable in the opening and having a beaded margin of greater diameter than the diameter of the opening, said closure also having an outer flange resting against the outer surface of the wall with a portion of the flange projecting outwardly beyond the boundary thereof, providing a tab for ready lifting of said closure, and with diametrically opposite portion of the flange located within the said wall and spaced from the opposite boundary of the wall, and a frangible wrapper about the container, and adhesively attached to the outer surface of the said closure, in permanent fashion, whereby when said tab is first lifted, the wrapper tears along a pair of parallel lines generally tangent to said closure providing a strip of the wrapper to which the closure remains attached, and the end of which strip provides a hinge for repeated opening and closing of the opening by swinging of the closure.

U. S. 2,547,880 — Method and Apparatus for Corrugating Sheet Material and Forming Laminated Cellular Units Thereof. Leonard S. Meyer and Eric K. Ritterhoff, Newark, Ohio. Filed August 9, 1949—Issued April 3, 1951.

Apparatus for forming longitudinally extending corrugations in strips of resin-impregnated material during continuous movement of the strips which comprises a forming unit including a plurality of pairs of positively and continuously driven forming rollers between which a strip is passed, a curing unit for receiving the formed strip, said curing unit including a pair of positively and continuously driven continuous platen belts between which the strip is passed, means for heating such belts, and a pair of rollers beyond the curing unit which are positively and continuously driven, the pairs of successive rollers being driven at gradually increasing speeds for pulling the strip continuously through the forming and curing units.

U. S. 2,547,928—Process for Manufacture of Chlorine by Oxidation of Hydrogen Chloride. Clyde W. Davis and Forrest A. Ehlers, Antioch, and Roger G. Ellis, Walnut Creek, Calif., assignors to The Dow Chemical Company, Midland, Mich. Filed February 13, 1947 — Issued April 10, 1951.

A process of producing chlorine which comprises forming a gaseous mixture of hydrogen chloride and oxygen-containing gas, preheating the same, passing the preheated mixture upwardly through a particulate body of a contact mass at a temperature between 300° and 600° C. and with a gas velocity sufficient to fluidize the body, said contact mass consisting of granular particles of a porous inert carrier on which is deposited a Deacon process catalyst composed of a metal compound slowly vaporizable at the reaction temperature, cooling the exit gases from the reaction zone to condense a portion of the water vapor therein and thereby absorb accompanying vapors of a metal compound, forming a hydrochloric acid solution of the compound, introducing such solution into the fluidised body of the contact mass to maintain the concentration of the metal compound therein, and separating chlorine from the residual gases and vapors from said partial condensation step.

U. S. 2,547,948 — Process for Forming Magnetic Record Members from a Papermaking Fiber Slurry. Otto Kornei, Cleveland Heights, Ohio, assignor to The Brush Development Company, Cleveland, Ohio. Filed July 21, 1947 — Issued April 10, 1951.

In a method of preparing a magnetic record member for transducing signals by magnetic flux interlinkage of successive portions with a magnetic record transducing head, the steps comprising: mixing powdered permanently magnetizable iron oxide having a particle size of about one micron with a slurry of paper making fibers containing a bonding agent in the proportion of from 8 to 25 percent iron oxide by volume of the total solids; forming a paper about two to three mils thick from the resulting mixture; and calendering the paper so formed.

U. S. 2,547,997—Molding from Fiber Dispersions. Harold E. Bowers, Pittsburgh, Pa., assignor to The New England Box Company, Greenfield, Mass. Filed March 19, 1946—Issued April 10, 1951.

The method of producing an article of manufacture of the character described having a predetermined apparent density which comprises providing a mold of predetermined volume, providing an aqueous dispersion of a predetermined quantity of feltable fibrous material derived from wood with which is ultimately intermixed a predetermined quantity of a comminuted, water insoluble filler agent having a melting point not substantially exceeding 176° C. and a vapor pressure below its melting point sufficiently high to sublime, forming a felted web of the mixture of fibrous material and filler agent from the dispersion while removing the bulk of the water therefrom, compressing the web of fibrous material and interspersed filler agent in said mold to said predetermined volume to form a shape of said predetermined volume, drying the compressed shape by evaporating residual water and then heating the shape to a temperature not exceeding the melting point of the filler agent but high enough to cause its removal by sublimation, said predetermined quantity of fibrous material in said dispersion being that which when said web is compressed to said shape and the residual water removed and the filler agent is sublimed off the shape will have said apparent density and said predetermined quantity of filler agent in said dispersion being just sufficient to fill the spaces between the fibrous material when said shape is compressed to said predetermined volume.

U. S. 2,548,095—Production of Construction Materials from Wood and Other Vegetable Fibers. Harold E. Bowers, Pittsburgh, Pa., assignor to The New England Box Company, Greenfield, Mass. Filed January 10, 1948 — Issued April 10, 1951.

A method of producing an article of manufacture having properties of natural wood which comprises intermixing a quantity of deflbrated lignocellulose fibers with a quantity of uncooked starch and sufficient water to gelatinize the starch, thereby to form a charge, transferring the charge to a mold chamber wherein the charge is put under pressure thereby to form a shape, heating the mold chamber to a temperature sufficient to gelatinize the starch in situ in the shape, then cooling the shape and thereafter drying said molded shape to reduce its moisture content to where it is substantially in equilibrium with the moisture content of the atmosphere.

U. S. 2,548,136 — Register Control Means for Continuous and Intermittent Web Feed Mechanism. Frederick Auer, Teaneck, N. J., assignor to Champlain Company, Inc., Bloomfield, N. J. Filed June 22, 1946 — Issued April 10, 1951.

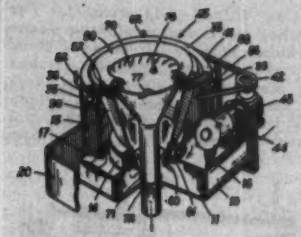
Apparatus comprising a machine feeding and operating on a continuously moving web, a machine operating on an intermittently moving web, said web having a slack loop between said machines, top and bottom feed wheels at the second named machine continuously engaging said web, a top shaft carrying said top feed wheels, a common power source for driving said machines and said feed wheels, and means between said power source and said feed wheels to drive said feed wheels intermittently, the intermittent drive from said power source and the aforesaid means being applied to the top feed wheel shaft, said top shaft being removably mounted in the machine with bearings adjustable to receive top feed wheels of different diameter, said means between said power source and said feed wheels including two shafts one of which rotates uniformly and drives the other non-uniformly, one of said shafts having an arm carrying a cam roller engaging a cam on the other shaft, said cam being so shaped that the driven shaft is accelerated, decelerated, and then dwells during each rotation, and means to change the feed of the web in one of said machines relative to the feel of the web in the other of said machines in order to compensate for any error in the feed which might otherwise cause a gradual cumulative change in the slack loop between the machines.

U. S. 2,548,341 — Absorbent Pad. George A. Bricmont, Berea, Ohio, assignor to Diapette, Inc., Bratenahl, Ohio. Filed November 9, 1948—Issued April 10, 1951.

An absorbent pad consisting substantially entirely of paper and having a core of paper having good wicking characteristics, said core having at least one end portion thereof folded back upon the main portion thereof, a finely divided highly absorbent paper layer extending between said folded and main portions of said core and covering said core, and a covering enclosing said pad and composed of two layers of paper, each layer having a high wet strength which is higher in one dimension of the paper, said two layers having their higher wet strengths crossing each other approximately at right angles.

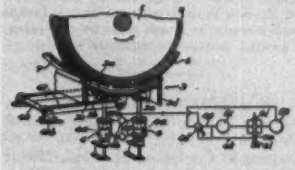
U. S. 2,548,417—Apparatus for Thickening Liquid Slurry Stock. Joseph Baxter, Jr., Franklin, Ohio, assignor to The Black-Clawson Company, Hamilton, Ohio. Filed December 24, 1948 — Issued April 10, 1951.

Apparatus of the character described for thickening a liquid slurry stock by removing liquid therefrom comprising a frusto-conical perforate screen member mounted with the larger end thereof uppermost, means for supplying stock to be thickened to the lower end of said screen member, means for rotating said screen member to cause said stock to travel upwardly along the inner surface thereof with accompanying discharge of liquid outwardly through the perforations therein, imperforate collecting means defining a chamber for receiving the thickened stock from said screen member, means mount-



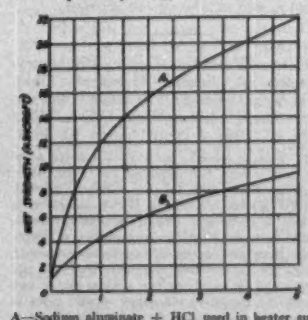
ing said collecting means in stationary position inwardly of the perforate surface of said screen member, and means forming a peripheral discharge lip extending inwardly from the upper end of said screen member, said lip being curved radially inwardly of said screen member and downwardly to a position located radially inwardly of the periphery of said collecting means to form an inverted trough partially overhanging said chamber for guiding said thickened stock from said screen member into said chamber.

U. S. 2,548,425 — Beater. George W. Dodge, Hoosick Falls, N. Y., assignor to The Noble & Wood Machine Company, Hoosick Falls, N. Y. Filed October 9, 1945 — Issued April 10, 1951.



In a beater, a bed plate, a beater roll mounted above said bed plate, means for adjusting said bed plate vertically towards said roll and for holding it under predetermined pressure in operating position against said roll, and means for maintaining the bed plate in a horizontal plane relative to the roll, and for holding the bed plate against the circumferential thrust of the beater roll including a torque shaft rotatable in fixed bearings, and parallel connecting rods fast at their outer ends to said torque shaft and pivoted at their inner ends to the bed plate.

U. S. 2,548,513—Method of Making High Wet Strength Paper. Fred W. Boughton, Rochester, N. Y., assignor to Eastman Kodak Company, Rochester, N. Y. Filed April 22, 1944 — Issued April 10, 1951.



A—Sodium aluminate + HCl used in beater substantially free of bivalent anions.
B—Aluminum sulfate used in beater.
% Melamine-formaldehyde resin (based on bone-dry pulp).

A method of making high wet strength paper which comprises beater sizing paper pulp with an acid precipitable sizing material, adding thereto in sufficient amount to precipitate the sizing and impart a pH of 4-6.5 an aluminum material selected from the group consisting of an alkali metal aluminate plus hydrochloric acid, an alkali metal aluminate plus acetic acid, an alkali metal aluminate plus nitric acid, aluminum chloride, aluminum nitrate and aluminum acetate, incorporating in the pulp ¼-5%, based on the bone-dry weight of the pulp, of a wet strength-imparting resin selected from the group consisting of the melamine-formaldehyde resins and the melamine-monoureide-formaldehyde resins, and forming paper therefrom.

U.S. 2,548,646 — Moldproofing Mineral Coated Papers. John A. Bicknell, Westbrook, and Stanley J. Johnson, Portland, Maine, assignors to S. D. Warren Company, Boston, Mass. Filed January 2, 1946—Issued April 10, 1951.

Process which comprises mixing with casein in aqueous medium sodium salt of pentachlorophenol and sodium pyrophosphate, in amounts individually insufficient to solubilize the casein but sufficient in toto to form a uniform stable dispersion of casein in water, the sodium pyrophosphate content being about 5% by weight of the casein content, and thereafter dispersing aluminum flake therein to yield a paper coating composition.

U.S. 2,548,705 — Flap Retainer Clip for Paper Cartons. Ray H. Collier, Jackson, Miss., and Robert H. Collier, Oak Park, Ill. Filed March 14, 1950 — Issued April 10, 1951.

The combination with a container having a tubular body the upper end of which is closed by a top having inclined sides terminating in an upright ridge formed by the upper contiguous ends of the sides and a flap hingedly connected to the body of the container for outward hinging movement to expose a dispensing opening; of a flap retainer comprising a U-shaped clip having leg portions gripping and straddling the upright ridge, and a strap member connected to one of the leg portions, said strap member extending obtusely with respect to said clip and overlying one of the inclined sides and said flap in contiguous relation whereby said flap is retained flat against said side in a closed position.

Can. 472,309 — Processes of Coating Papers. William Warwick Cowgill, Fairfield, Connecticut, U.S.A., assignor to Dominion Rubber Company, Limited, Montreal, Quebec, Canada. Filed November 12, 1947 — Issued March 20, 1951.

A process of coating paper with an amorphous thermoplastic polymer having a second order transition temperature between 40° C. and 135° C. which comprises applying a coating of an aqueous dispersion of said amorphous polymer on the surface of the paper, drying the coated paper at a temperature which is from 20° C. to 60° C. higher than the second order transition temperature of said polymer, pressing the coated surface of the paper against a heated surface at a temperature which is from 40° to 80° C. higher than the second order transition temperature of said polymer and thereby converting the polymer on the surface of the paper to a thin continuous coating; and stripping the resulting hot coated paper from said heated surface.

Can. 472,441 — Primed Hardboard and Processes of Producing the Same. James B. McCorkle, Evanston, Illinois, U.S.A., assignor, by mesne assignments, to Canadian Gypsum Company Limited, Windsor, Nova Scotia, Canada. Filed August 3, 1948—Issued March 27, 1951.

Hardboard having at least one integral surface thereof coated with a coating composition comprising a protein-lignocellulose reaction product.

Process producing a primed hardboard which comprises coating a porous mat of interlaced lignocellulosic fibers with a pigmented proteinaceous coating composition and subjecting the coated mat to consolidating pressure at a temperature range between about 400°F. and about 500°F.

Can. 472,480—Methods of Preparing Chlorine Dioxide Gas. Frey Viking Sundman, Kuusankoski, Finland, and Johan Waldemar Sevon, deceased, late of Kuusankoski, Finland, by Karl-Gustaf Birger Fogelholm, Helsinki, Finland, administrator, assignors to Kymin Osakeyhtio - Kymmene Aktiebolag, Kuusankoski, Finland. Filed May 16, 1946—Issued March 27, 1951.

A process for producing chlorine dioxide which comprises contacting a member of the group consisting of sulfur dioxide and gas mixtures containing sulfur dioxide with a chlorate-containing solid in the presence of insufficient water to dissolve the chlorate, with mechanical agitation to increase the extent of contact between the gas and the solid.

A process according to claim 1 comprising the addition in solid form of indifferent organic or inorganic substances not taking part in the reaction to the chlorates or the chlorate-chloride mixture in order to achieve the dilution of these necessary for the reaction.

A process according to claim 1 comprising the addition of a substance selected from the group consisting of sand, gypsum and sodium sulphate as an indifferent substance to prevent the baking together of the most reaction mixture.

A process according to claim 1, 2 or 3 comprising carrying out the reaction in a reaction vessel equipped with a crushing or grinding unit to distribute the chlorates in the reaction mixture.

Can. 472,496 — Methods and Apparatus for Curing Felts. Charles Barton Albright, Piqua, Ohio, U.S.A., assignor to The Orr Felt & Blanket Company, Piqua, Ohio, U.S.A. Filed August 25, 1947—Issued March 27, 1951.

A method of drying an endless paper-makers fabric belt forming a closed loop and curing a heat curable resin contained therein that includes stretching an endless fabric belt between a pair of rolls within a heating chamber, continuously recirculating heated air within the chamber in one path around the belt and rolls to raise the temperature of the belt to that at which the resin is curable, concurrently drawing heated air from the chamber transversely through one limited portion of the fabric belt and returning the air withdrawn from within said chamber to said chamber in a second path in high velocity streams impinged upon that portion of the fabric belt through which air is being drawn to obtain uniform heating of that limited portion throughout the entire thickness thereof, and continuously moving the belt in the chamber between the rolls and past the station at which the air is drawn transversely through the belt to sequentially cause all portions of the belt to have air forcefully passed there-through at regular intervals until the belt is dry and the resin contained therein is cured.

Can. 472,509—Apparatus for Sealing Valved Bags. William Roy Peterson and Carl Henry Hartman, New York, New York, U.S.A., assignors to St. Regis Paper Company, New York, New York, U.S.A.

In an apparatus for filling and sealing bag valves of a type bearing heat sensitive adhesive on opposed wall portions which are adapted to be brought together and adhered to seal the valve, the combination comprising a bag filling machine having a filling spout and bag chair means for alternatively supporting the bag with the spout in the valve or in a position with the bag valve portion tilted away from the spout, and heated clamping means on said machine adjacent said spout and positionable to clamp together such wall portions of the bag after the filled bag is tilted from the spout.

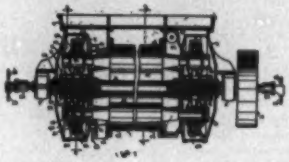
Can. 472,574 — Dissolving Cellulose. Sidney Milton Edelstein, Elizabeth, New Jersey, U.S.A. Filed August 8, 1944 — Issued April 3, 1951.

In making a solution of cellulose, the method which comprises treating cellulose of mean fiber length not substantially above 200 microns with a solution of an alkali metal hydroxide containing dissolved alkali metal zincate.

In making a solution of a cellulosic material, the method which comprises treating a cellulosic material consisting essentially of material selected from the group consisting of cellulose and alkali stable cellulose ethers and having a mean fiber length not substantially above 200 microns with a solution of an alkali metal hydroxide at a concentration at least equal to the salting out concentration for dissolved cellulose and then diluting the sodium hydroxide to a concentration not substantially above 12 per cent.

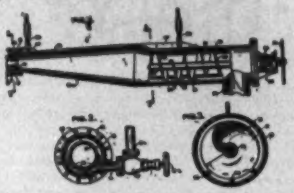
Can. 472,576 — Machines for Working Paper Stock and Other Materials. Anton J. Haug, Nashua, New Hampshire, U.S.A. Filed August 7, 1948 — Issued April 3, 1951.

In a machine for working paper stock and the like, the combination of a casing provided with an approximately cylindrical horizontal inner wall surface, a crushing roll in said casing extending longitudinally thereof, means supporting said roll for rotation around its own axis, also for movement toward and from said surface and for orbital rotation around the axis of said cylindrical surface; said means comprising bearings supporting



the opposite ends of said roll, spiders in which said bearings are mounted for movement toward and from said surface, means supporting said spiders for rotation around said axis, and fluid pressure mechanism supporting said bearings in floating condition between opposed fluid pressures so that said roll has limited freedom of radial movement between said surface and said axis.

Can. 472,602 — Apparatus for Preheating and Conveying Fibrous Ligno-Cellulose Stock to a Mechanical Abrading or Defibrating Apparatus. Hjalmar S. Messing, New York, New York, U.S.A., assignor to American Defibrator, Inc., New York, New York, U.S.A. Filed February 12, 1949 — Issued April 3, 1951.



Apparatus for preheating and conveying lignocellulose material in a pressure system comprising a receiver an inlet conduit therefor, means for supplying steam to said receiver, the floor of said receiver being inclined downwardly from its inlet end for at least a portion of its length, said steam-supplying means being interposed between said inlet conduit and the downwardly inclined floor of said receiver for direct traversal by entering steam of the path of flow of the material being treated and conveyor means for carrying the material to the discharge end of said receiver, said conveyor means being interrupted at periodic intervals along its length to retard the passage of material through the apparatus.

Can. 472,715 — Molding Fiber Compositions. Clark C. Heritage, Cloquet, Minnesota, U.S.A., assignor to Wood Conversion Company, St. Paul, Minnesota, U.S.A. Filed June 30, 1943 — Issued April 3, 1951.

A hot-moldable composition of feltable fibers comprising essentially and in substantially uniform distribution, feltable fiber-forms of mechanically defibered wood containing substantially all the content of the wood from which the fibers are derived including water-soluble forms of lignin and polysaccharides which forms are products of reaction in the wood of natural water-insoluble constituents of the wood in the presence of water vapor at temperatures above 212° F. at which lignin in the wood is softened, and heat-softenable thermosetting resin-forming solids adhesively united to the fibers in amount by weight from about 4 parts to about 150 parts of such resin solids to 100 parts of dry fiber, said composition being characterized by the ability of the fibers to flow one relative to the others at a softening heat for said solids, whereby to facilitate flow of fibers to fill a mold in a hot-molding operation.

Can. 472,778 — Paper Machinery. Stephen A. Staege, Hamilton, Ohio, U.S.A., assignor to The Black-Clawson Company, Hamilton, Ohio, U.S.A. Filed July 15, 1947 — Issued April 10, 1951.

In a paper machine including a forming member and means for collecting the white water draining from said forming member, a stock supply system comprising, in combination, a screen, a pump and conduit positioned between said screen and said forming member to supply stock from said screen to said forming member, means for recirculating said white water to said screen and for supplying new stock to said screen, means for regulating the output of said pump to control the pressure on the stock as delivered to said forming member, means for adjusting said regulating means, and means responsive to changes in the supply of stock from said screen for controlling said adjusting means.

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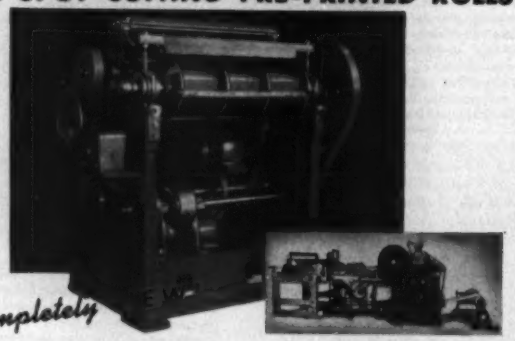

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FINANCIAL

Marathon Corp. and its subsidiaries for the six months ended April 30, 1951, report consolidated net earnings were $3,800,957 after provision of $7,581,276 for income taxes, compared with $2,678,641 earned after income taxes of $1,804,394 in the corresponding six months of the preceding fiscal year. After preferred stock dividend requirements, the latest six-month earnings were equal to $2.83 a share on the company's common stock, compared with $1.97 a share a year before.

Union Bag & Paper Corp. has declared a regular quarterly dividend of 50 cents per share on the capital stock, payable June 15 to stockholders of record June 8.

H. R. MacMillan Export Co., Ltd., has declared a dividend of 12½c on classes A and B stock, payable June 30 to stockholders of record June 9.

Fraser Cos., Ltd., has declared a dividend of 50c on common stock, payable July 30 to stockholders of record June 29 and another dividend of $1.19 on preferred stock, payable July 1 to stockholders of record June 8.

Howard Smith Paper Mills Ltd. has declared a dividend of 50c on preferred stock, payable July 30 to shareholders of record June 29.

St. Lawrence Corp., Ltd., has announced it will redeem both its outstanding preferred stock issues on July 16. Outstanding preferred stock of St. Lawrence Paper Mills Co., Ltd., wholly owned subsidiary, will also be redeemed on this date. The date of July 25 previously fixed for payment of dividends on these issues to stockholders of record July 3, has been accelerated to July 12. Formal notice of redemption will go forward to stockholders in the near future.

Redemption price of St. Lawrence Corp., Ltd., cumulative redeemable $49 par first prefered is $55 per share, while call price for the cumulative redeemable one dollar par second preferred is $20 per share. The cumulative $99 par first preferred of St. Lawrence Paper Mills Co. is redeemable at $105 per share and the cumulative one dollar par second preferred is redeemable at $60.

There were 115,167 shares of St. Lawrence Corp. first preferred outstanding and 74,187 shares of second preferred as at April 30. Outstanding first preferred of St. Lawrence Paper Mills at that date amounted to 124,875 and there were 34,312 second preferred shares outstanding.

The first preferred shares of St. Lawrence Corp. Ltd. are convertible into common shares on the basis of two common for each preferred. At April 30 there were 881,061 one dollar par common shares outstanding.

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Standard & Poor's Survey

COMMON STOCKS

PAPER	Fiscal Year Ended	Earnings $ Per Share 1936-1939 High	1936-1939 Low	1949	1950	Interim Mos.	Interim 1950	Interim 1951	Fiscal Year Divs. $ Per Shr. 1949	Fiscal Year Divs. $ Per Shr. 1950	1951 Price Range	Recent Price	†Price Earns. Ratio	‡Yield %
■ Champion Paper	3-31	1.17	d0.11	[4]7.55	[4]E8.50	9 Dec.	[5]5.15	[5]6.63	[4]2.00	[4]2.70	57½-45½	54	6	5.6
■ Crown Zellerbach	4-30	1.58	1.05	[4]6.12	[4]E7.50	9 Jan.	4.49	5.71	[4]2.00	[4]2.80	54⅜-48⅜	50	7	6.2
■ Gair (Robert)	12-31	0.43	d1.96	1.31	[3]2.85	.....	....	....	0.70	1.00	13½-11⅝	13	5	7.7
◆ Great Northern Paper	12-31	2.73	1.20	4.87	4.33	.....	....	....	2.80	1.00	54 -46	50	12	6.0
■ Hinde & Dauch	12-31	1.77	0.65	2.51	3.75	.....	....	....	1.35	1.80	21½-18¾	19	5	7.9
■ International Paper	12-31	0.99	d0.99	5.70	7.39	.....	....	....	2.00	2.35	56⅜-48⅜	51	7	5.9
■ Kimberly-Clark	[6]4-30	2.06	0.88	5.29	[7]E6.25	12 Jan.	1.46	6.28	[8]2.00	[7]2.25	50 -42⅝	44	7	5.5
■ Marathon Corp.	10-31	0.94	0.23	3.29	4.84	3 Jan.	0.86	1.42	1.40	1.40	45 -37¾	43	9	4.7
■ Mead Corp.	12-31	1.92	d0.74	3.28	5.71	.....	....	....	1.20	1.75	27¼-23¾	24	4	6.7
Minnesota & Ontario	12-31	...	...	2.63	4.09	.....	....	....	1.50	2.00	31½-24½	28 bid	7	7.1
■ St. Regis Paper	12-31	0.22	d0.12	0.91	2.10	.....	....	....	0.60	0.70	13⅜-11½	13	6	4.6
■ Scott Paper	12-31	1.33	0.83	3.04	3.90	.....	....	....	1.31	1.82½	48¼-41	48	13	4.2
■ Union Bag & Paper	12-31	1.32	0.37	5.01	7.23	.....	....	....	2.50	3.00	44½-37⅜	40	6	7.5
■ West Va. Pulp & Paper	10-31	2.14	d0.75	9.31	12.93	3 Jan.	2.01	2.81	3.00	5.00	84 -75	79	6	6.3
CONTAINERS														
■ Container Corp.	12-31	1.14	0.02	4.23	5.87	3 Mar.	1.02	2.35	2.00	2.75	39⅞-32¼	38	6	5.3
■ Dixie Cup	12-31	2.48	1.42	7.44	12.18	.....	....	....	1.12½	1.62½	59¼-44⅜	58	5	3.2
■ Gaylord Container	12-31	0.92	0.24	1.77	2.94	.....	....	....	1.30	1.30	27¾-23⅜	25	9	6.8
■ Lily Tulip	12-31	2.06	0.67	4.46	8.87	.....	....	....	1.14	1.59	54¾-39	54	6	3.7
■ National Container	12-31	0.16	0.06	0.91	2.42	.....	....	....	0.50	0.75	13¾-11	13	5	6.2
■ Sutherland	12-31	2.80	2.04	4.62	7.66	.....	....	....	2.50	2.50	50 -43½	48	6	5.2
PULP														
■ Rayonier	12-31	1.94	d0.08	4.75	[11]11.16	3 Mar.	2.02	E2.75	2.00	2.50	54⅜-46⅛	50	4	5.0

PREFERRED STOCKS

	Current Call Price	Fiscal Year Ended	Earnings $ Per Share 1936-1939 High	1936-1939 Low	1949	1950	Interim Mos.	Interim 1950	Interim 1951	Current Dividend Rate $	1951 Price Range	Recent Price	Yield %
■ Champion Paper, $4.50	[9]108	3-31	....	....	[1]99.97	[1]87.66	9 Dec.	[2]60.09	[9]76.45	4.50	107½-100½	101	4.5
■ Container Corp., $4	103	12-31	....	....	89.52	123.64	.....	....	....	4.00	106¾-100¾	101	4.0
■ Crown Zellerbach, $4.20	102½	4-30	....	....	[1]61.84	[1]55.88	.....	....	....	4.20	106 -102	102	4.1
■ Dixie Cup, $2.50 cv. "A"	45	12-31	5.32	4.11	10.93	16.31	.... .	....	....	2.50	60 - 51	60	4.2
■ Gair (Robert), $1.20	20	12-31	....	....	8.99	13.92	.....	....	....	1.20	20½- 19	20	6.0
■ Int'l Paper, $4 cv	115	12-31	....	....	224.55	289.77	.....	....	....	4.00	109 -101½	102	3.9
◆ Kimberly-Clark, $4.50	107	[6]4-30	....	....	85.27	[10]114.89	9 Jan.	....	85.76	4.50	108½-107	107	4.2
■ Mead Corp., $4.25	105	12-31	....	....	51.37	109.12	.....	....	....	4.25	100 - 93½	98	4.3
■ [2] Mead Corp., $2 cv. 2nd	56	12-31	....	....	33.46	79.78	.....	....	....	2.00	67 - 59¾	60	3.3
■ Rayonier, Inc., $2	37½	12-31	4.99	1.88	9.54	19.72	.....	....	....	2.00	37⅜- 35⅜	36	5.6
■ St. Regis Pap., $4.40 1st A	104	12-31	27.73	d4.43	30.74	69.54	.....	....	....	4.40	96 - 91⅜	93	4.7
■ Scott Paper, $3.40	104½	12-31	....	....	51.15	65.41	.....	....	....	3.40	102 - 95	95	3.6
■ West Va. Pulp, $4.50	110	10-31	18.37	1.67	66.43	92.91	3 Jan.	14.47	20.82	4.50	111 -108½	109	4.1

■ New York Stock Exchange. ◆ New York Curb. [4] Adjusted wherever necessary for stock splits and stock dividends. d Deficit. [1] 1948-49 and 1949-50, respectively. [2] $5.50 B preferred in 1937-1945. [3] Includes $0.35 paid after year-end. [4] 1949-50 and 1950-51, respectively. [5] 1949 and 1950, respectively. [6] Fiscal years ended Dec. 31 in 1949 and prior years. [7] For fiscal year ending April 30, 1951. [8] Includes 60% equity in Southern Paperboard Co. [9] Through June 30, 1951; then at 107. [10] For 12 months ended Dec. 31, 1950. [11] After special credits of $1.55 a share. † Based on 1950 earnings except where noted. ‡ Based on rate indicated by latest quarterly payment (for further details see individual company write-up). E—Estimated.

Eddy Paper Corp. declared a dividend of $3 on common, payable June 29 to stockholders of record June 15.

Fibreboard Products, Inc., has declared a dividend of 25c per share to holders of common stock as of June 15, payable on June 30.

Gaylord Container Corp. reports earnings for the first quarter of 1951 of $2,369,060 after estimated income taxes. This is $1.01 per share. Compared to 40c per share, the revised figure for the first quarter of 1950, this showing seemingly reflects considerable progress. The added volume of new production in most favored lines tends, however, to outmode this comparison. To fairly evaluate operating results, the last quarter of 1950 offers a more realistic comparison.

In this comparison, sales were up 5¾ percent; operating earnings before income taxes were up 29 percent; income taxes as estimated were 187 percent of the fourth quarter of 1950 (over $1,800,000 or 77c per share); and finally, net earnings after estimated taxes were down 14 percent from $1.18 per share to $1.01.

Abitibi Power & Paper Co., Ltd.,'s new issue of $10 million 4¼ percent convertible debentures offered through a syndicate of investment dealers was heavily oversubscribed with orders received from both institutional and private investors all across Canada.

Great Lakes Paper Co., Ltd., plans to split its stock three-for-one, subject to approval of shareholders. A special meeting of shareholders is to be summoned for approval of this split. A dividend of 75c a share has been declared, payable June 30 to stockholders of record June 11. This rate works out at 25c a share on the new shares.

Puget Sound Pulp & Timber Co. have declared the regular quarterly dividend of 50 cents a share on the common stock, and an extra dividend of 50 cents a share, both dividends payable June 28 to stockholders of record June 18.

Bathhurst Power and Paper Co., Ltd., reports for the first quarter of 1951 an estimated net profit of $728,-114, equivalent to $1.82 per class "A" share. This compares with $476,043 and $1.19 per share for the like period in 1950.

SUPPLIERS

HERCULES POWDER CO. announces the establishment of the trade name "Kymene 138" for a wet-strength resin for paper. This wet-strength resin was formerly known as "Resin 138."

GENERAL ELECTRIC CO has appointed Alan Howard operation manager for the Gas Turbine Division.

MACBETH CORP. and subsidiaries, Newburgh, N. Y., manufacturers of pH meters, photometers, optical instruments and color matching lights, has acquired a second plant in Newburgh. This will double present manufacturing and research facilities and represents a fourfold increase in plant size since the Macbeth Corp. moved to its present site from New York City early in 1950. The new plant will be in operation about June 1.

MINNEAPOLIS-HONEYWELL REGULATOR CO. has made the following appointments:

Marshall B. Taft, assistant to Henry F. Dever, president of the Brown Div., has been named manager of staff operations in addition to his other duties. James N. Redpath has been made special assistant to Mr. Dever, to serve as liaison man between government and company activities. Henry M. Schmitt, industry manager, will devote full time to directing and coordinating sales in connection with the company's expanded AEC program.

Gordon H. Cole, the company's Washington industrial manager, has been transferred to the government's project office of the company. He will direct the handling of Navy, U. S. Coast Guard and Maritime operations.

Mr. Dever has named an operations planning committee for handling policy and promoting continuing over-all operations. The committee will include L. Morton Morley, vice-president of Honeywell and Brown; George M. Muschamp, vice-president in charge of engineering; Frank M. Rea, manager of manufacturing operations; and Mr. Taft.

GENERAL ELECTRIC CO.'s Control Divisions at Schenectady, N. Y., has appointed Dr. Louis T. Rader assistant manager of engineering.

LIBBEY-OWENS-FORD GLASS CO., Plaskon Div., has named Donald O. Wynocker to assist Charles Walker in a newly expanded sales area for the company's glues and industrial resins. Mr. Wynocker will assist Mr. Walker in covering the latter's present territory of Ohio, Michigan and Indiana, which will be extended to include Pennsylvania, New York and the New England states.

PHILADELPHIA QUARTZ CO. is celebrating 120 years of continuous business. On July 21, 1831, Joseph Elkinton first opened the doors of his soap and candle enterprise in Philadelphia. He had recently returned from service for the Society of Friends as a teacher in the Tunessassa Indian School of New York. Although he had trained as a silversmith, the production of soaps definitely appealed to him.

Thomas Elkinton's leaning toward technology directed his attention to silicate of soda, mentioned in a scientific journal. Thus, it was early in 1858 that equipment was bought to experiment with the product. The use of silicate of soda in the Elkinton soaps showed a distinct advantage for increasing washing action.

At the beginning of the present century, the acceptance of the corrugated paper box as a shipping container, resulted in utilizing another of silicate's properties — adhesiveness, which had been discovered earlier. A new plant opened in Chester, Pa., was devoted exclusively to manufacturing silicates of soda. At that time, the Philadelphia factory was closed and soap making discontinued.

Through the company's research over a long period of years, series of chemicals were produced by varying the proportions of the ingredients of silicate of soda which led to a variety of useful applications.

Besides the Anderson and Chester units, plants today are located at Baltimore, Md.; Buffalo, N. Y.; Jeffersonville, Ind.; Kansas City, Kans.; Rah-

(Continued on page 71)

Money-Saving Tip from *Kalamazoo*

"LINE OLD TANKS WITH KALAMAZOO GLAZED TILE"

It isn't always necessary to replace old concrete tanks that are pitted and letting sand get in your stock. Such tanks make an ideal base for Kalamazoo Glazed Tile. Gives you a "new" tank *at low cost* that will last for years and years without attention. Tile lets you modernize your chests and improve agitation with midfeathers and rounded corners. Write for full particulars—no obligation, of course.

Kalamazoo TANK and SILO COMPANY

625 HARRISON STREET KALAMAZOO, MICHIGAN

PRICES

The prices below reflect market quotations in New York at the mill level on standard grades. Does not include spot offerings.

PAPER AND BOARD

Standard News, Delivered Ports
Rolls, contract, per ton $105.00/110.00
Sheets ..... 110.00/ —

F.o.b. Mills. C.l. Frt. allowed, dock, N. Y.

Kraft— pr cwt., 40# base wgt.
Standard Wrapping Rolls ..... $7.75/ —
No. 1 Wrapping Rolls 8.25/ 8.50
Standard Bag ..... 7.50/ —

Tissues— per ream 24x36 (480) 10 lbs. 2500 lbs or more

Wh. No. 1 Frd.	$1.95	/$2.25
Wh. No. 1 MG	2.10	/ 2.40
Wh. No. 1½	1.85	/ 2.15
Wh. No. 2	1.85	/ 2.15
Kraft Anti-Tar 20x30	1.85	/ 2.15
White Anti-Tar 20x30	1.95	/ —

Toilet— per case or 100 rolls—1 M sheets

Unbleached 4½x4½	$8.00/$8.25
Unbleached 4½x5	6.60/ —
Bleached 4½x4½	10.00/12.50
Bleached 4½x5	9.85/ —

Per Case of 50 rolls—2000 sheets

Unbleached 4½x4½	$8.00/$9.75
Bleached 4½x4½	6.95/ —

Per Case of 100 rolls—1000 sheets

Facial, 4½x5, 2-ply	$8.95/10.65

Paper Towels— per case of 3750

Wh. Jr. M'tif'd 9½x9½	$5.75
Br. Sr. M'tif'd 9½x12	4.10
Br. Jr. M'tif'd 9½x9½	3.60
Br. Jr. Sgl. fold 9½x10½	3.65
Bichd. 7½x11, 24/25 rolls	$7.00/7.55

Manila, per cwt.

No. 1 Jute Tag, 100-lb., sheets*	$19.55/21.35
Reg. Jute M.F. 40-lb., sheets*	18.00/20.00
Wrapping Manila	8.75/10.50
Printing Manila	10.50/12.00

* Less usual allowance for rolls.

Gummed Tape— per bdl., 500 bdls. or more

90-lb. 375 ft. GSI	$7.20	/ —
60-lb. 600 ft. GSI	7.20	/ —
35-lb. 800 ft. GSI	8.28	/ —
35-lb. 500 ft. GSO	6.21	/ —

MARKET WOOD PULP

Second Quarter Contract Prices, Per Short Air-Dry Ton

	Varying freight allowances		Atlantic Ports		
	U. S.	Canadian	Swedish	Finnish	Norwegian
Groundwood	‡$85.00/ 90.00	‡$95.00/100.00			
Sulphate, Bleached	135.00/200.00	190.00/200.00	*$275.00/315.00		*225.00/ —
Sulphate, Unbl. Northn.		145.00/175.00	*250.00/295.00	$200.00/ —	
Sulphate, Unbl. Southn.					
Sulphite, Bichd. (Sftwd.)	135.00/165.00	160.00/175.00	*275.00/290.00	*225.00/ —	*225.00/ —
Sulfite, Bichd. (Hdwd.)	155.00/ —				
Sulphite, Unbichd.		150.00/160.00	*250.00/265.00	*200.00/ —	
Sulphite, Unb'd (Glassine)		164.00/ —	*252.00/ —		
Soda, Bichd.	140.00/142.50	155.00/160.00			
Sideruns, Pulping News	106.00/ —	106.00/ —			

* On dock. † Delivered. ‡ F.o.b. Shipping Point.

Boards, per ton—

Filled News	$107.50/ —
Plain Chip	105.00/107.50
Bichd. Mla. L-d. Chip	147.50/ —
White Pat. coated .020	170.00/ —
Kraft Liners 42 lb.	115.00/117.50
Kraft Corr. .009	122.50/126.00
Binders Boards	137.50/140.00

The following prices are representative distributors' resale prices.

Rag Content Bonds and Ledgers—

White, 20 lb.

Bonds	4 Cms.
	per cwt.
100% Rag Ex. No. 1	$70.45/$75.90
100% Rag	62.65/ —
75% Rag	48.15/ —
50% Rag	38.90/ —
25% Rag	31.65/ 33.00

Ledgers	4 Cms.
	per cwt.
100% Rag Ex. No. 1	$72.65/$72.80
100% Rag	63.90/ —
75% Rag	49.40/ —
50% Rag	40.20/ —
25% Rag	33.00/ 34.30

Sulphite Bonds and Ledgers

White, 20 lb.

Bonds	4 Cms.
	per cwt.
Watermarked	$19.00/$20.50
Plain	18.05/ 19.50

Ledgers	4 Cms.
	per cwt.
Watermarked	$20.30/$21.80
Plain	19.35/ 20.80

White Book

Conversion Coated	Case
	per cwt.
No. 1	$23.40/$24.60
No. 2	21.90/ 23.40
No. 3	20.40/ 22.40

Machine Coated

No. 1	$18.15/$18.40
No. 2	16.15/ 16.65

Uncoated

No. 1 Antique (Watermarked)	$18.65/$19.15
Offset	17.40/ 19.90
A Grade E. F.	17.40/ 18.15
A Grade S. C.	18.15/ 18.65
B Grade E. F.	17.65/ —
B Grade S. C.	16.90/ 18.40

‡ Indicates a price change.

WASTE PAPER MARKET

The following quotations were gathered from major dealers in each market. They are an indication of the price range in which volume tonnage was moving on the date specified. Prices to mills, per ton, f.o.b. cars shipping point (includes brokers' fee.)

	New York June 4	Philadelphia June 7	Boston June 2	Chicago June 1
No. 1 Mixed Paper	$20.00/ 21.00	$21.00/ 24.00	$19.00/ 21.00	$20.00/ —
Buxboard Cuts	23.00/ 25.00	21.00/ 24.00	36.00/ —	25.00/ —
Mill Wrappers	25.00/ 30.00	25.00/ 30.00	22.00/ 30.00	22.00/ —
No. 1 News	23.00/ 24.00	22.00/ 25.00	— /22.00	22.00/ —
Over-issue News	30.00/ 35.00	30.00/ 35.00	22.00/ 24.00	25.00/ —
Corrugated Containers	59.00/ 68.00	58.00/ 63.00	56.50/ 58.00	52.00/ —
New Corrugated Cuts	50.00/ 55.00	60.00/ 65.00	55.00/ 65.00	62.00/ —
Double Kraft Ld. Corr. Cuts .*	115.00/120.00	105.00/120.00	120.00/140.00	120.00/ —
100% Kraft Corr. Cuts .*	140.00/160.00	125.00/135.00	130.00/170.00	140.00/ —
Used Kraft Bags .*	85.00/ 95.00	80.00/ 85.00	85.00/116.50	65.00/ —
No 1 Brown Kraft Paper .*	90.00/ 95.00	90.00/ 95.00	90.00/110.00	65.00/ —
Super Resorted Br. Kraft .*	100.00/105.00	100.00/105.00	100.00/125.00	90.00/ —
New Br. Kraft Env. Cuts .*	160.00/180.00	160.00/175.00	160.00/180.00	150.00/ —
New Br. Kraft Cuts .*	150.00/170.00	130.00/140.00	150.00/180.00	140.00/ —
No. 1 Gdwd Shvs.	60.00/ 65.00	50.00/ 65.00	75.00/ 85.00	55.00/ —
White Newsblanks	85.00/100.00	80.00/ 90.00	90.00/100.00	80.00/ —
No. 1 Flyleaf Shvs. .*	80.00/ 85.00	80.00/ 85.00	95.00/110.00	100.00/ —
No. 1 Soft Wht. Shvs. .*	180.00/190.00	170.00/175.00	175.00/195.00	175.00/ —
Super Soft Wht. Shvs. .*	190.00/200.00	190.00/200.00	190.00/210.00	185.00/ —
Hd. Wht. Shvs. .*	185.00/210.00	190.00/215.00	190.00/215.00	180.00/ —
Hd. Wht. Env. Cuts .*	200.00/245.00	200.00/225.00	200.00/235.00	190.00/ —
New Manila Env. Cuts .*	140.00/150.00	160.00/165.00	140.00/165.00	115.00/ —
Col. Tab Cards .*	115.00/120.00	115.00/120.00	95.00/150.00	100.00/ —
Manila Tab Cards .*	170.00/185.00	165.00/190.00	160.00/200.00	165.00/ —
No. 1 Mixed Ledger .*	95.00/105.00	100.00/105.00	87.00/110.00	100.00/ —
White Ledger .*	130.00/140.00	125.00/130.00	125.00/140.00	125.00/ —
No. 1 Book & Mag.†	44.00/ 50.00	35.00/ 40.00	40.00/ 60.00	25.00/ —
No. 1 Rep'd. Hvy. Books‡	50.00/ 55.00	50.00/ 60.00	60.00/ 75.00	50.00/ —

* GCPR Ceiling. † Includes Time & Life; no coarse groundwood. ‡ Not to exceed 10% groundwood.

RAG MARKET

New Domestic Cotton Cuttings
OPS Ceiling Price, CPR 28
Delivered Mill Basis

Add 7½% Dealer Commission

No. 1 White Shirts	$21.00
No. 1 Unbichd. Muslins	21.00
Bichd. & Unbichd. Underwears	21.00
Bichd. Canton Flannels	21.00
No. 1 Light Silesias	14.00
No. 1 Light Prints	11.50
No. 1 Blue Overalls	14.50
Suntan Khakis	11.50

Add 10% Dealer Commission

Fancy Shirts	$10.00
Indigo Blues	10.00
Mixed Khakis	8.00
Corduroys	8.00
Cottonades	8.00
No. 1 Washables	6.50

Old Domestic Cotton Rags
(Prices to Dealers, f.o.b. Ship. Pt.)

	Per 100 lbs.
Mixed White	$5.00/$5.50
Cotton Pants & Overalls	4.25/ 5.00
Thirds and Blues, Repacked	3.75/ 4.00
No. 1 Roofing Rags	3.10/ 3.25
No. 2 Roofing Rags	2.25/ 2.35
No. 3 & 4 Roofing Rags	2.15/ 2.25
Roofing Bagging	2.15/ 2.25

Bagging
(Prices to Dealers, f.o.b. N. Y.)

	Per 100 lbs.
Foreign Gunny	$7.50/$7.75
Domestic Gunny, No. 1	$7.50/$7.75
Heavy Wool Tares	8.00/ 8.25
Foreign Manila Rope	8.00/ 8.25
Domestic Manila Rope	7.50/ 8.50
Jute Strings	7.75/ 8.00
No. 1 Sisal Strings	8.00/ 8.25
Paper Mill Tares	5.25/ 5.75
Foreign Scrap Burlap	6.00/ 6.25
Domestic Scrap Burlap	7.00/ 7.50
Austr. Wool Pouches	7.50/ 8.50
New Burlap Cuttings	7.50/ 8.00

MATERIALS

Aluminum, sulfate:		
comm. bags, wks.	cwt.	1.65
iron-free c.l.		3.25
Alcohol, ethyl:		
tax free, dms. c.l.	gal.	1.01 / 1.05½
dnld. East Miss.		
Alcohol, methyl:		
Synthetic, Zone 1, dms. c.l. flt. alld.	gal.	.44
Casein, acid-prec.:		
dom. sh. pt. c.l.	lb.	.40 / .41½
imp. ex. dock	lb.	.31½/ .40
Caustic soda:		
c.l. wks. solid, 76%, cwt.		3.35
flak. & grd. 100-lb. drums		3.75
liquid 50% tanks		2.55
liquid 70% tanks		2.65
China clay:		
dom. air-float. filler, c.l. wks.	ton	10.00
water-washed, lump, filler		11.00
coating		17.50 /20.50
imported, ex whse.	short ton	15.20 /28.35
Chlorine:		
single-unit tanks, works	cwt.	2.70
multi-unit	cwt.	3.20 / 4.40
Formaldehyde:		
USP, ink. dms, c.l. wks.	lb.	.0625/ .0675
l.c.l., E. wks.		.0675/ .0725
Fuel oil:		
Bunker C, No. 6 Cal. bvy tanks, refinery	bbl.	1.95 / 2.15
light	bbl.	2.00 / 2.25
Hydrogen peroxide:		
USP, 35% chys. E. of Miss.		
Lime:	lb.	.23½/ .26½
hydrated, bags, wks. Buffalo		
Rosin:	ton	13.50
B gum, drums, c.l. Savan.	cwt.	8.00
G, H, I, K	cwt.	8.79 / —
FF, wood, dn.	cwt.	7.30 / —
Rosin size:		
70%, gum & pale grds, tank cars, south, sh. pt.	cwt.	6.80 / 7.00
Salt cake:		
dom. bulk, c.l. wks.	ton	17.00
wks. frt. all.	ton	20.00 /22.00
Soda ash:		
light, 58%, bags, wks.		1.30
bulk	cwt.	1.20
Sodium silicate 40°:		
turbid. c.l. wks.	cwt.	1.30 /
l.c.l. wks.		1.60 / 1.85
Sodium peroxide:		
dms. c.l. E. of Miss.	lb.	.21
l.c.l. dn.	lb.	.21½/ .22
Soybean, protein:		
chem. ind. wks. c.l. Cinn. and Chic.	lb	.24 / —
Sulfuric acid:		
66° Be. chys. cl. wks.	cwt.	1.75 / -
l.c.l. wks.	cwt.	2.05 / 2.85
Sulfur:		
crude, c.l. mines, contract.	long ton	21.00 /22.00
f.a.b vessels Gulf		22.50 /23.50
Export, f.a.b. Gulf		25.00
Sulfur dioxide:		
liquid, comm. cyl. wks.	lb.	.09
multi-unit cars	lb.	.0535
Starches:		
pearl corn, bags, c.l. wks.	cwt.	6.02 / —
white dextrines, c.l. wks.	cwt.	7.41 / —
potato, Idaho, c.l. wks.	cwt.	5.50 / -
potato, Maine, c.l. wks.	cwt.	5.75 / —
tapioca, conv. dextrines	cwt.	7.75 / 8.50
low, Siam, on dock N. Y.		5.75 / 6.00
Talc:		nominal
domestic, 50-lb. sacks, c.l. wks.	ton	23.00 /30.00
Titanium dioxide:		
anastase, c.l. dnld., bags	lb.	.21 / .21½
l.c.l. dnld.	lb.	.22 / .22½
rutile, c.l. dnld.	lb.	.23 / .23½
l.c.l. dnld.	lb.	.24 / .24½

SUPPLIERS

(Continued from page 69)

way, N. J.; St. Louis, Mo.; Utica, Ill. A subsidiary, Philadelphia Quartz Co. of California also operates three plants.

Throughout the 120 years' rise from a humble beginning to an important factor in the huge modern chemical industry, the Elkinton family have been active. Thomas W. Elkinton, great grandson of the founder, is president.

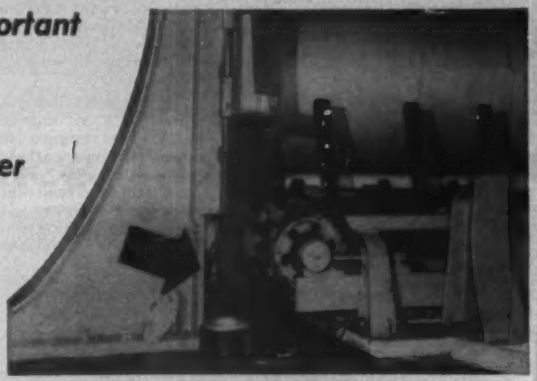
"Respected Friends," the company's salutation reflects the founder's policy in his dealings and it is carried down to this day.

PROCESS INDUSTRIES ENGINEERS, INC., Pittsburgh, Pa., have opened an office in Rochester, N. Y., and Larry Woll has been appointed Western New York district manager. Mr. Woll will make his headquarters at 703 Temple Bldg., in Rochester.

WESTINGHOUSE ELECTRIC CORP. has appointed Mark F. Slusser as administrative assistant, industrial products sales.

In his new position, Mr. Slusser will have direct responsibility for coordination of activity on compliance with price control regulations. He also has been assigned duties in connection with service on renewal parts and will assist the sales manager in following up key projects.

An important POINT to remember



An important NAME to remember

LOVEJOY L-R
FLEXIBLE COUPLINGS

Too often overlooked but of vital importance to the proper operation of paper mill equipment are the flexible couplings. Sturdy Lovejoy Flexible Couplings correct instantly for misalignments without vibration, backlash or chatter.

Other important points to remember about LOVEJOY L-R FLEXIBLE COUPLINGS

- Tough, resilient, free-floating cushions held in sturdy metal jaws.
- No shutdowns for changing cushions.
- No lubrication.
- Available for every duty from 1/6 to 2500 H.P.

SEND FOR CATALOG AND QUICK-FINDING SELECTOR CHARTS

LOVEJOY FLEXIBLE COUPLING CO.

5069 W. Lake Street — Chicago 44, Illinois

Also Mfrs. of Lovejoy Universal Joints and Lovejoy Variable Speed Transmissions.

James V. Donohue

MIXING EQUIPMENT CO., INC., 135 Mt. Read Blvd., Rochester, N. Y., has appointed James V. Donohoe vice-president in charge of sales.

IMPROVED PAPER MACHINERY CORP., Nashua, N. H., will be closed for a vacation period for the one week—June 30 through July 8. This is not a total shutdown. A skeleton crew in both office and factory will be on duty to handle emergency inquiries and orders.

DOW CHEMICAL CO., Midland, Mich., has assigned Rudolph W. Kugler as a plastics coatings salesman for the New York area.

NICHOLS CHEMICAL CO. has appointed D. Drummond Mackay manager of the Montreal office.

J. O. ROSS ENGINEERING CORP., manufacturers of air processing systems, have transferred R. W. Grott, Jr., to the engineering staff of the company's Los Angeles office. Mr. Grott has been a member of the Ross engineering staff in Boston and will take up his new duties at Los Angeles in June.

SARCO CO., INC., has moved its Chicago midwest headquarters to new and larger space at 322 W. Randolph Street, Chicago 6, Ill. This manufacturer of steam specialties has its main sales office in the Empire State Building New York City; the factory is at Bethlehem, Pa. George H. B. Burke, manager of the Sarco midwest headquarters, has been with the company for 40 years.

BORDEN CO. has appointed Herbert H. Clarke, Jr., and Charles W. Niederauer as vice-presidents of the Chemical Division.

Mr. Clarke has been manager of the Chemical Division's West Coast activities since 1950. He joined the Division in 1940 and in 1946 was appointed western sales manager.

Mr. Niederauer has served as manager of general services and as executive assistant to the president of the Chemical Division for the past three years. He joined Borden's Employee Relations Department in 1943 and in 1945 was appointed supervisor of labor relations and general administrator for the Chemical Division.

G. D. JENSSEN CO., INC., reports that A. H. Lundberg of Seattle, Wash., has resigned as West Coast representative for the company. All company business will be handled directly from the head office of the company in Watertown, N. Y., for the present. It is expected that a new West Coast representative will be named very soon.

WESTINGHOUSE ELECTRIC CORP. has appointed Robert E. Ferry manager of apparatus sales offices in Wheeling and Fairmont, West Va.

Mr. Ferry will be located in the National Bank of West Virginia building, in Wheeling. He will supervise apparatus sales activities for Westinghouse in the Wheeling and Fairmont districts.

BORDEN CO.'s Chemical Division plans to construct a formaldehyde and liquid urea resin manufacturing plant on the outskirts of Demopolis, Ala. This will be the first plant in the Southeastern States to produce formaldehyde.

Construction work on an outdoor type of a distillation plant, which will cover about five acres, will begin shortly. Completion is scheduled for the first part of 1952. It will be geared to produce about 1,500,000 pounds of formaldehyde and about 2 million pounds of liquid urea resin per month during the first year of operation.

HENRY DISSTON & SONS, INC., saw, tool and steel manufacturers, have elected John R. Wanamaker, great grandson of the late John Wanamaker, to the board of directors.

SVEEN-PEDERSEN SALES CORPORATION, 35-41 Eleventh Street, Long Island City, N. Y., elected new officers at a meeting of the board of directors held in New York City. The following officers were elected: Odd Wennberg, president; Paul Easton, vice-president and sales manager; William G. Weygand, treasurer; Newman Lawler, secretary.

The Sveen-Pedersen Sales Corp. was appointed the new, exclusive agent in the United States for sales, engineering and servicing of the Sveen-Pedersen Saveall.

Paul Easton, newly elected vice-president and sales manager, is well known by paper mill men throughout the U. S., being associated with the paper industry since 1936.

Herman L. Berg, who has joined the staff as sales and service engineer, has been associated with the Sveen-Pedersen Saveall since its introduction into the United States and also is well known in the paper industry.

WHITING CORP., Harvey, Ill., reports that the Swenson Evaporator Co. (Division of Whiting) has added William F. Scanlan to the staff of the Houston District Sales Office. At the same time the territory of the Houston Office has been extended to include not only the state of Texas, but also the state of Louisiana, plus a portion of southern Arkansas and a section of western Mississippi, including Natchez.

Patrick Dolan

PATTERSON FOUNDRY & MACHINE CO., East Liverpool, Ohio, has named Patrick Dolan district manager of the newly established Baltimore office. Mr. Dolan has been a sales engineer at the main offices for a number of years. The Baltimore office will be located at 1605 Court Square Building.

GENERAL ELECTRIC CO. has appointed Kenneth S. Watson, formerly assistant director of the Ohio River Valley Water Sanitation Commission, coordinator of industrial waste treatment for General Electric.

STOCKER MANUFACTURING CO., Netcong, N. J., has appointed Paul Cooper controller of the company. He took over the full management of the entire staff on May 15. He was procedure and audit manager of the Ohio Boxboard Co., Rittman, Ohio, prior to his association with Stocker Manufacturing Co.

NEW LITERATURE

National Starch Products, Inc. Leaflet, "The Amazing Versatility of Starch for Paper Making." Highlights the versatility and diversity of their products for paper making, coating, and converting. Lists the types, uses and principal characteristics of the paper starches.

Rohm & Haas Co. Technical booklet. Covers the nature, grades, properties and applications of Triton and Hyamine surface-active agents. Includes section on the preparation of emulsions, tables, and a summary.

Tremco Mfg. Co. Brochure, "Floor Maintenance." Presents complete program for the care of many types of floors, including wood, concrete, linoleum, etc. Illustrated by numerous photos, diagrams and drawings.

Westinghouse Electric Corp. SA-6739, "Power Factor Visualizer." Prepared in the form of a slide-rule-type chart. Explains what low power factor is, what it means to both the power user and power supplier, and benefits obtained by improving power factor in the industrial distribution system through the installation of capacitors.

Allis-Chalmers Mfg. Co. Leaflet, "The Meaning, Application and Measurement of pH." Simple, concise and non-technical treatment of subject. Includes tables.

Andrews, H. P., Paper Co. Booklet, "Reproduction Paper Coating." Covers the various activities of the Technical Paper Department in the field of the light-sensitive papers, such as blueprint, brownprint, diazotype.

Bausch & Lomb Optical Co. Catalog L-117, "Optical Parts." Includes a price list.

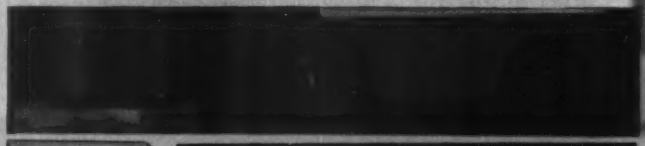
Beck Machine Corp. Catalog, "Slitter and Rewinder." Sales copy with illustrated information on slitter attachments and their full machine line.

Brookings Institution. Booklet, "Current Issues in Foreign Economic Assistance," 103 pp., price $1. Deals with primary issues with respect to economic assistance to foreign countries and the proposals that have been made for three possible types of commitment to be assumed by the recipients of as-

Cash in on overhead-

space, that is — with

Clark fork-lift trucks!



For valuable tips on making savings through safety, send for a copy of Clark's newest booklet, "Safety Saves."

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sistance. Forms a part of a more extended investigation.

Carpenter Steel Co., Alloy Tube Div. Sheet, "Schedule 5 Pipe Recommended to Conserve Stainless Steels." Includes tables.

Defense Production Administration. Pamphlet, "Mobilization Guide for Small Business." Contains information on how to be placed on Government bid lists, methods of financing plant construction, how to appeal for "hardship relief" from controls and regulations, etc.

Factory Mutual Engineering Div. Pamphlet, "Know Your Fire Extinguishers." Introduces new employee-training film in color.

Farval Corp. Sales copy, "Studies in Centralized Lubrication." Recommends four keys to increased production and lowered operating expense.

General Electric. Booklet, "The Silicone Story." Introduces this group of chemical products, tells what they are, what they can do and have done, and profit gained through their usage in terms of their four basic properties.

Kold-Hold Mfg. Co., Platecoil Div. Technical Data Manual. Reports on the use of Platecoils as a medium of heat exchange. Supplies charts and formulae to aid in basic calculations of industrial heating and cooling applications.

Lift Trucks, Inc. Application data sheets on four Stuebing lift truck models. Provides dimensions, dimensional drawings, capacities and operating performance figures, also turning radius charts.

Loomis, W. H., Talc Corp. Bulletin, "Thirty Years in the Talc Business."

Minneapolis-Honeywell Regulator Co. Technical Bulletin No. B51-2, "Fundamentals of Industrial Electro-Chemical Measurements and Automatic Control." Covers the measurement of pH, redox, and conductivity in industrial control systems. Includes fundamental principles of electro-chemical measurements as well as final control elements for automatic control systems.

Minnesota Mining & Mfg. Co. Bulletin, "3M Brand Adhesives Meeting Government Specifications—For Your Export Packaging!"

Morse Chain Co. Catalog No. C72-51, "The Morse HY-VO Drive—High Speed, Heavy Duty Power Transmission."

Sveen Pedersen Sales Corp. Bulletin. Describes and illustrates the Flotation Saveall used for reclaiming or separation of suspended solids in white or waste waters and for separating any type of suspended matter from water.

U.S. Dept. of Agriculture, Forest Service. Booklet, "Biennial Report—1949 and 1950." Outlines accomplishments and action in Federal and cooperative forest research in the Southeast.

U.S. Dept. of Commerce, Office of Technical Services. Book, "Review of Current Research." Outlines the policies and activities of engineering research in the colleges and universities holding membership in Engineering College Research Council. Lists research projects and personnel and includes index.

NEW EQUIPMENT

Bale Breaker

This new bale breaker is designed to take highly compressed bales of cotton linters—bales so hard that an axe won't cut into them—and tear them apart ready for processing. It will open bales of straw at the rate of 1000 pounds per minute, it is stated. The bales are brought to the feed conveyor which pushes them against a revolving head. The material is torn apart and opened up by projecting teeth. It is believed that this new machine will meet a long existing demand for almost any baled material. The machine illustrated has a throat 36" wide and the head diameter is 24". It is made in sizes up to a 72" throat and head diameter of 42".

Deaerated Unit Loads

Savings up to 7½ man hours per car in unloading time are being made with special deaerated unit load shipments of paper coating and filler clays, the manufacturer states. After passing through deaerating equipment, the clay bags are normally stacked in unit loads of 3,000 pounds on sturdy fibreboard sheets, with the bags held in place by an adhesive. Freight cars are loaded

"EXCELSIOR" FELTS

The Trademark of Felts of Superior Quality for Every Grade of Pulp and Paper

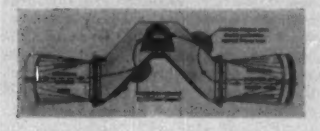
KNOX WOOLEN COMPANY

CAMDEN, MAINE

at the plants in patterns best suited to the customer's unloading facilities. Field reports indicate that shipments arrive in excellent condition, further that the deaeration saves approximately 20 percent storage space.

Magnetic Separators

"ATOMagnets" are improved permanent magnetic separators designed to remove tramp iron from materials conveyed in air lines. Among the new features are fully riveted construction for increased rigidity; continuous hinge



of non-magnetic aluminum for ease of cleaning and for longer service; formed aluminum cover to prevent accumulation of iron on backs of castings with consequent loss of magnetic strength. The "Hump" has a *dog-leg* construction to take advantage of the difference in inertia between the magnetizable material and the material to be cleaned. Strategically-placed baffles are designed to twice direct the material flow 30 degrees from the normal straight line so that two "ATO-Magnets" on opposite faces of the unit set up a magnetic barrier in tandem; what one misses the other catches. This break in material flow gives the "ATOMagnets" an opportunity to remove all dangerous tramp iron, it is said.

Transmission Chain Drive

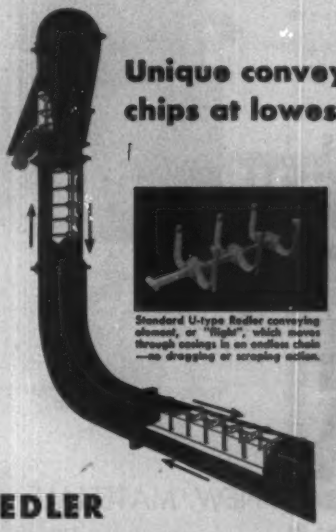
A revolutionary power transmission chain drive of far-reaching significance to America's paper industry has been announced. Featuring entirely new design principles and called Morse Hy-Vo (high velocity) Chain Drive, it is said to provide a power transmitting medium that combines the ruggedness and dependability of a gear drive with the smoothness and lack of vibration of a belt; also to make possible single drive units capable of transmitting as much as 5,000 h.p. at linear speeds to 6,500 f.p.m., or rotative speeds to 3,600 r.p.m..

Feature is a new chain-and-sprocket engagement principle designed to eliminate *chordal* or polygon action. Hy-Vo sprockets also are of new design. They have curved involute teeth which engage the links with conjugate action. The chain embodies a new, compensating rocking joint with special design features for eliminating slippage and wear. During chain articulation, the joint shifts the pitch-line automatically, engaging the involute sprocket teeth in such a way that the chain follows a path truly tangent to the sprocket pitch line. The result is a smooth, almost vibrationless action.

The drive is ideal for use on drive applications such as engine compounding or heavy-duty power transfers where center adjustment is impractical, or in fact, in any field where a heavy-duty, high-speed drive is required, the manufacturer states.

Adhesive Converter

Visco-Mat is a machine that automatically converts dry adhesives into a ready-to-use liquid glue of the correct viscosity. Through its process of feeding the dehydrated adhesive powder into solution, and blending it with water, which is automatically fed in necessary proportions, it maintains a constant check on the desired and precontrolled viscosity setting. The machine also has a set of visual signals, which indicate the condition and



Unique conveyor moves wood chips at lowest cost per ton

Standard U-type Redler conveying element, or "flight", which moves through casings in an endless chain —no dragging or scraping action.

Cross-section of standard Redler casing. This shows material moving in lower run and flights returning in circuit fashion in the upper run.

REDLER

Conveyor Elevators . . .

S-A REDLER vertical closed-circuit conveyor elevator encircles storage silo . . . stores and reclaims wood chips for delivery to digester located in adjacent building.

REDLERS convey and elevate wood chips *in the mass*—horizontally, vertically, on incline or around bend corners. Skeleton-type links buried in the flow of wood chips keep them moving as a solid column. Continuous Conveying action takes place within a totally-enclosed, dust-tight casing.

Compact REDLERS are smaller in cross section than other types of conveyors of the same capacity. They handle large tonnage in limited space. Standarized construction, economy of installation and other features contribute to low first cost . . . and maintenance, too, is less.

Ask for Catalog 140 and full details.

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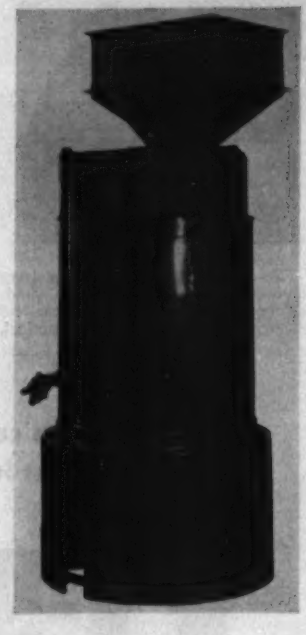

the range of the adhesive it is preparing. By means of a simple hand-setting control dial, the end ready-to-use adhesive product is made to whatever consistency the user requires.

Features a constant reservoir of ready-to-use liquid adhesive, and savings in storage space.

NEW MATERIALS

Versatile New Glue

Designated 530-11L, the new glue is a modified urea resin sold in liquid form which is reported to cure very rapidly when used in continuous lumber core bonding operations, due to an exothermic reaction inherent in the glue. In addition, the new resin may be used satisfactorily in cold press assembly gluing where heavy glue lines are unavoidable. Used with hardeners S-1 and S-14, it may have important application as a wood adhesive, abrasive binder and in other industrial applications, the manufacturer believes.

Resin 138

Resin 138 is a new resin for wet-strength papers—specially designed so that a high proportion of the resin will be retained. In addition to producing wet strength as measured by tensile or mullen tests after soaking, it also improves other paper properties such as wet- and dry-rub resistance, dry strength, and folding endurance, the manufacturer states.

In water solution, ready to use, the resin may be added as received or diluted with water to any convenient concentration. No acid additions or aging periods are required before using, it is said.

May be added anywhere in the stock system, although maximum efficiency will normally be obtained by adding it after all refining has been completed. Alum is not required with this resin, although acidic conditions are necessary to effect cure. It may be used in tub-sizing operations where it is desirable to obtain wet strength by this means or to improve general dry-strength properties. Where used in sized grades of paper, the resin produces the desired wet strength and, in addition, acts as a size additive to impart increased water resistance, it is claimed.

Geon Latex

Resistance to chemical attack, grease, and protection against moisture vapor transmission in fiber drums are insured in fiber drums through a protective interior coating of Geon polyvinyl chloride latex, the manufacturer states. A decided advantage claimed for the latex is that it does not chip or flake off, thus there is no contamination of the product shipped and no clogging of valves in the processing fluid lines. May be applied either to the interior or exterior of fiber drums, depending on the type of protection required. An outside coating provides abrasion resistance, protection against water or moisture penetration, and a surface which can be easily washed, it is stated.

INDIA'S NEWSPRINT INDUSTRY

India is taking steps towards establishing a full-fledged newsprint industry. A recent survey of fir resources conducted in the Punjab, Himachal Pradesh and Uttar Pradesh (three large States on the Himalayan border) shows that about 180,000 tons will be available every years for the manufacture of newsprint. For want of proper management, it is gathered, large quantities of firs (estimated to be 75,000 tons a year) go to rot at present. Ways and means of utilizing the fir and spruce and coniferous trees that are available in quantities are being closely studied by a foreign expert. This expert whose services have been made available under the Technical Assistance Scheme of the F.A.O. will be shortly getting the assistance of two advanced students who get practical training in Scandinavian countries in the manufacture of newsprint.

When manufacture of newsprint is taken up in India, it is estimated the cost will be about 150 dollars a ton. The current price of newsprint in India is about 200 dollars. More than the price, it is the pathetic dependence that is driving her towards action.

Foreign Investment—A Weapon* for World Peace

The Honorable Nelson A. Rockefeller[1]

Perhaps one might well say in summarizing our situation that the basis of the free world's security today will be built on expanding production—expanding production of raw materials, of food, of industrial capacity and of armaments, to meet the human needs of a free world and defense needs of a free world.

But expanding production today can no longer be solely in one part of the world or for the benefit of one group in the world. The only basis has to be an expanding free world economy, with increased production, increased earning power and increased buying power for all free peoples in the underdeveloped areas as well as in the developed areas of the world.

The question before us as a nation, as a people, as businessmen, is how. We have a pretty good pattern in our own country, a pattern that has been worked out within the framework of a democratic, capitalistic structure. Of one thing I am sure, that we cannot solve this world problem through charity alone, for two reasons:

First, the only way to meet this problem is to strike at the roots, to get at the basis of the conditions and difficulties, and that cannot be done through charity alone. We long since found that out within our own country.

Secondly, and I think this is of great importance to us as a nation, is that people of the world do not want charity. They do not want to be the ward of any nation or any people. They want a chance to work, to live, to care for their children, to regain their self respect and their sense of human dignity.

During a period of ten years, from 1940 to 1950, this country has, through one form or other, given to other peoples of the world, in the interest of defense and security, more than $82 billion.

But the time is coming when we have to find the fundamental solution, the sound basis, for long-term partnership built on mutual self interest. One might well study this question from a psychological point of view because today, as never before, the peoples of the world are involved in decisions of their nations. That is one of the most encouraging and hopeful facts for the evolution of the dignity and self respect of man, of free man.

People need a sense of direction, a sense of purpose, a sense of identity and motion, and an association with others in their common interests. We have seen, during the period of emergency and war, what that common purpose can create in the way of a sense of unity, a feeling of confidence. The great challenge today before the peoples of the free world is to create that sense of common purpose and direction and motion in meeting the problems of peace.

That is easy to say, but perhaps for the minute we ought to look at the facts and see what they are. Take our

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This explains why over 900 units have been sold (not counting those by imitators!) since its introduction. Your Jones representative will tell you more about it — or write for Bulletin 1011-B.
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[1] Chairman, International Development Advisory Board.

* Address at the World Trade Luncheon sponsored by the New York World Trade Week Committee and Cooperating Organizations, The Waldorf-Astoria, New York City.

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own country. Six percent of the people of the world, seven percent of the land, and yet today the United States produces 50 percent of all the manufactured goods in the world.

However, we only produce within our own country one-third of the raw materials of the world and, therefore, we are dependent for one-sixth of the raw materials used in our factories on imports from abroad. Of those imports of strategic and critical materials — including all our rubber, manganese, chromium and tin, one-third of our lead and aluminum, one-quarter of our zinc and copper — 73 percent of those imports come from the underdeveloped areas. Therefore, our dependence on them is very real and very tangible, not only for military production but for the well-being of our people.

The program as presently constituted in Washington is for a 20 percent expansion by 1953 of the productive capacity of this nation.

Mr. Aneurin Bevan, the recently resigned Secretary of Labor in England, pointed out in his speech of resignation in the House of Commons that the United States was undertaking this great expansion, and he raised the question that if we expanded our economy 20 percent, where are we going to get the raw materials to meet those needs when we are already the largest buyer in the world? He pointed out that expansion in this country in the next two years will be greater than Great Britain's entire production for civilian and military use. We are more than duplicating her economy in two years and I am confident that there are a great many people in the United States who do not even realize it. It is an illustration of the tremendous weight of our economy in the world scene today.

As we expand, we are going to depend even more importantly on the importers, and in many areas those raw materials have already been cut. Soviet imperialism now controls one-third of the people of the world and its penetrating forces are operating in other areas.

Furthermore, we might ask ourselves: "Where are we going to be as a nation with this increased productive capacity that will be devoted to military production?" According to plans we will produce our military requirements on top of a full-scale program of civilian production both for hard goods and soft goods by 1953—when, God willing, the emergency will have come to an end. Then, what will the additional plant capacity, involving about $50 billion worth of goods a year, be used for?

We cannot just close those plants, we cannot dismiss the labor and stop that production. Therefore, we are faced with the problem of where we are going to find the outlets that guarantee the labor production and the high standards of living which we are obtaining day by day in this country.

Again it brings us back to the very subject of our meeting—foreign trade, an increased flow of foreign trade in an expanding world economy. For the minute, let us look at the European situation, including the British situation.

They are faced with a rearmament program. If their civilian production is put into war goods, it means a lowered standard of living. How much can Europe take in that respect? Or, if they take from export production which represents to the underdeveloped areas 70 percent of their imports, what will happen to the underdeveloped areas which are dependent on Europe and the United States for the machinery and equipment, the transportation vehicles and the industrial materials which they do not have within their own borders?

The cutting of that source of supply could very well result in economic and social chaos in large sections of the underdeveloped areas. Not only that, but, were Europe to lose her exports, or cut them off, where would her people get the funds for imports and food upon which they depend? They would be back where they were at the start of the Marshall Plan with the problem of the dollar gap. Therefore, your only answer for European problems, like our own, is an expanding world economy.

In turning to the underdeveloped areas of the free world they have 1,057,000,000 people, two-thirds of the free world, and the majority of them live in poverty. Their diet, on the average, is 20 percent below the minimum essential standard. Illiteracy runs to 70 percent. The average income of this 1,057,000,000 people is $80 a year as compared to Europe's $450 and the United States' average per capita income of $1470. Our own income will be extended by our increase in production in the neighborhood of $250 in the next year.

In the underdeveloped areas, trade is down 7 percent since 1937, and yet those are the people on whose productive capacity and raw materials, on whose manpower and cooperation in the world today our freedom and our well-being depend.

Take the situation in parts of the underdeveloped areas. We are making a study in one of the Latin American countries of exports—how to get more dollars to buy more machinery and equipment essential for the development of the country. One of the possibilities was wheat. They had a surplus, but they are having difficulty disposing of it in the world market. When the facts and figures were gathered, it developed that it took 20 men to produce what a man in the United States could produce with a machine and all of the modern benefits of fertilizer, insecticide and so forth.

But their price was too high. The man in the United States would be earning $4.50 a day, and these men were earning 21 cents a day, but to try

to bring the wheat down to a price at which it could compete in the world market—the only answer was to cut their wages nearly in half, 11½ cents a day.

We have arrived at a point where cheap labor in the world is no longer a threat to industrial labor, but industrial labor is a threat to cheap labor. The question is, "What is the answer and what is the remedy to that problem?"

Technical assistance is obviously important, but technical assistance is not going to solve the problem of two men, one providing the power with his hands and the other holding the chisel. They are pretty good at that.

What these people need is power, machinery, equipment. But power and machinery and transportation require capital.

The United States was fortunate in developing in a period in which capital flowed from Europe in large quantities, and we were able to invest intelligently in productive facilities which have resulted in an average of 2 percent per year increase in the productive capacity of labor during this period of our history.

How can we participate in creating conditions in the world today which will result in that forward evolution, this thrust forward in the economies of other parts of the world? There is the question, which was studied recently by the International Development Advisory Board at the request of the President.

I had the privilege of being a member of that Board on which were representatives of labor, agriculture and civic groups. The Board came to a series of unanimous resolutions on dealing with this problem of international development as a basis to our national defense and the well-being of the free peoples of the world. Briefly, these are the resolutions:

First, that there must be a centralization of authority in our own Government by creating an agency responsible for dealing with economic problems in the international field.

Today there are 23 agencies and departments dealing with these problems. It is too serious and too important in the lives of our people and the lives of people of other countries not to have a clear policy formulation and effective coordination of action in our own Government.

Secondly, we tried to break down the areas in which there can be economic cooperation so there could be clearer understanding. To so many this is a problem of Government, and to others, only private enterprise can do the job that has to be done. We came to the conclusion that it could only be accomplished on the basis of cooperation between all of the forces in our country which can be brought to bear on the problem, all the capacities and abilities and experience that is needed to get the job done and bring about the dynamic advance which is essential to expanding world economy.

AMERICAN PAPER AND PULP ASSOCIATION'S PAPER PRODUCTION RATIO REPORT

(Production as per cent of normal capacity)

COMPARATIVE WEEKLY SUMMARIES

	May 5	May 12	May 19	May 26	June 2
1951	103.7	102.3	103.0	101.8r	100.2
	May 6	**May 13**	**May 20**	**May 27**	**June 3**
1950	97.5	97.1	97.3	97.3	92.6

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1950	92.6	95.6	96.7	95.4	96.4	97.7	85.3	99.6	96.1	101.0	99.6	91.2	95.8
1951	99.3	101.3	102.3‡	103.1‡	102.5‡								

‡ Preliminary.
r Revised.

COMPARATIVE YEARLY SUMMARIES

	1944	1945	1946	1947	1948	1949	1950	1951
Year to Date	88.4	88.8	100.0	105.3	100.5	88.6	95.5	101.7
Year Average	88.1	89.4	100.1	104.3	96.2	88.6	95.8	

PAPERBOARD OPERATING RATIOS†

	May 5	May 12	May 19	May 26	June 2
1951	107	104	106	102	100
	May 6	**May 13**	**May 20**	**May 27**	**June 3**
1950	92	93	92	93	83

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1950	88	92	91	92	91	94	82	100	96	102	101	93	94
1951	102	103	104	105	104								

All of the above data is based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

Note: The chart shows the ratio through December 1950 on the basis of 6-day capacity. Beginning with January 1951 the ratio is shown on the new basis of normal 6- and 7-day capacities. Corresponding weekly and monthly ratios for 1950 on the new basis, shown in the tables above, are somewhat lower.

Paperboard operating ratios continue on the basis of a 6-day week.

† Per cents of operation based on "inch-hours" reported to the National Paperboard Association.

The first area of the three was the production of goods and services and that is, in a free world, a private enterprise function. The second is the field of public works—transportation, power and irrigation. In most of the underdeveloped areas today, that is largely a Government function, and the problem is one of international finance. Thirdly is the area of basic services—health and sanitation, agriculture and education. There we found that government-to-government cooperation throughout the United Nations and representative bodies can best follow the patterns that have been laid down by the philanthropic and voluntary agencies and regional groups over a period of a hundred to a hundred and fifty years.

The problem is, how do we stimulate the flow of these forces between the nations and between the peoples in those three areas? The outflow of capital today is one of the major problems with which we are faced. Production can only be developed by increased capital from industrial areas and the meager savings of the underdeveloped areas. It can be geared productively into those forces which will make it possible for labor to increase its productivity and, thereby, to increase its earnings.

We made recommendations on that, the primary one of which was the removal of taxes in this country on earnings from abroad. There were other recommendations and they cover a field which requires the major interest and study of private enterprise in this country. If the job is not done by private capital and Government does not create the incentive—and it cannot be done by guarantees—then we are going to be faced with those tragic conditions which exist in India where seven to fourteen million are facing starvation. Then our Government is going to be forced to step in. It will have to do it in the interest of our own country, and in the interest of our allies, and the burden will fall increasingly on the taxpayers of this country. We will be put back into the position of trying to use palliatives rather than striking at the roots of the problem. For our own security and the continued expansion of our economy, from the viewpoint of Europe's future, as well as from the point of view of the future of the peoples who live in the so-called underdeveloped areas, there is one road, and only one road, on which we can all find the life we are looking for, the hope for preservation and security of the free world. That is the road of common effort for common objectives, the achievement of increased production and increased earnings, of expanding trade and a rising standard of living.

Out of this will grow a lasting free world unity, lasting peace and a renewed sense of hope and faith in the future. When this has been achieved, the Iron Curtain will not be strong enough to hold the people in behind it.

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J-15

AGGRESSIVE SALES ENGINEER
Opportunity to join well known established machinery firm. Technical ability and paper making background necessary. Knowledge of beating and pulping process and equipment desirable. Some sales experience or sales inclination helpful. Must be able to travel in territory. Tell us about yourself in your letter. Address Box 51-331 care Paper Trade Journal. TF

PLANT ENGINEER—Bldg. Materials and Plastic Floor-covering Manufacturer, new large-scale New Jersey plant. Applicants must have minimum 6 years plant experience in maintenance, operations and design. Must be familiar with wide variety of process plant equipment and utilities systems. Must be college graduate engineer. Please submit resume with reply. Box No. 51-298, care Paper Trade Journal. A-3

SALESMAN with experience in the pulp and paper making processes is desired by a manufacturer of special pulp treating machinery to travel in the United States and Canada. Previous sales experience desirable, but not necessary. This is an excellent opportunity for an aggressive, ambitious man of high character and ability. Address Box 51-214 care Paper Trade Journal. J-15

ENGINEERING DRAFTSMEN
OR
MACHINE DESIGNERS
Experienced in paper and pulp mill or heavy machinery. Permanent position. When replying give qualifications and salary desired.
THE APPLETON MACHINE COMPANY
Appleton, Wisconsin
J-22

WANTED—Two experienced Machine Tenders; Two experienced Back Tenders; Two experienced third hands. Opportunity for back tenders to qualify for machinetenders. Specialty Kraft Mill. Middle West. Fourdrinier machines. Steady employment. Good wages. Address Box 51-277 care Paper Trade Journal. J-22

HELP WANTED

Superintendent for fine-paper mill; Night Superintendent, good paper maker; Tour Boss, lightweight papers; Industrial Engineer; Several Chemists, with and without paper experience; Salesmen and sales manager for South.
Beater Engineers, Machine Tenders and Back Tenders.
Many other positions open.
Personnel Service Assoc., 115 State Street, Springfield 3, Mass.
J-15

HELP WANTED
TOUR BOSS
Two required for multi-cylinder machine running linerboard in United States owned territory. Excellent climate, living and working conditions. Please state experience in full detail. All replies confidential. Reply Box 51-311 Paper Trade Journal J-15

SALARIED POSITIONS $3,500 to $35,000. We offer the original personal employment service (established 41 years). Procedure of highest ethical standards is individualized to your personal requirements. Identity covered; present position protected. Ask for particulars. R. W. BIXBY, INC. —117 Dun Bldg., Buffalo, 2, N. Y. TF

PRODUCTION CHIEF
Paper converting, nationally known. Printing, coating, gumming, laminating, finishing operations. Lifetime position for top-flight production executive. Our people know of this ad. Send full details confidentially to President, Box 51-222, care Paper Trade Journal. TF

WANTED—Experienced Supervisor to take charge of wood yard. In reply, state qualifications and previous employer. Salaried position. Mid-Western Mill. Address Box 51-276 care Paper Trade Journal. J-22

WORKING SUPERINTENDENT for small, fast growing Eastern mill making lightweight specialties. Cylinder machine experience essential. State qualifications and salary expected. Address Box 51-87 care Paper Trade Journal. TF

PROJECT ENGINEER—CALIFORNIA. 5 years experience. Processes and machinery for manufacture of floor coverings, wallboards, insulations, building materials. Permanent position. Salary open. Moving expenses allowance. PABCO PRODUCTS INC., 1550 Powell Street, Emeryville, California. Jy-13

WANTED — Machine Tenders and Back Tenders for corrugating medium and liner mill. Fourdinier and cylinder machines. Located in Western Pennsylvania; good working conditions; pleasant surroundings and very good labor relations. Call collect—Tarentum 1470. TARENTUM PRODUCTS CORPORATION, Tarentum, Pa. TF

MID-WESTERN FOURDRINIER SPECIALTY MILL has opening for experienced Production Superintendent. References required. Address Box 51-278 care Paper Trade Journal. A-31

HELP WANTED

WANTED — EXPERIENCED, COMPETENT PURCHASING AGENT for an eastern chipboard mill. Must be capable and fully experienced. Furnish details of experience, capabilities and references. Excellent opportunity. Address Box 51-153 care Paper Trade Journal. TF

WANTED — TOP GRADE SALESMANAGER for an eastern chipboard mill. Fully experienced and capable. Furnish details of experience, capabilities and references. Excellent opportunity. Address Box 51-78 care Paper Trade Journal. TF

PAPER AND BOARD SALESMAN—Established wholesale jobber in Boston has opening for a qualified salesman. Submit complete details in letter of application with photograph to Box 51-288 care Paper Trade Journal. J-15

WANTED—Experienced Trimmer Man to operate Seybold Trimmer. Please state age, experience and when available in first letter to FLOWER CITY TISSUE MILLS CO., 700 Driving Park Avenue, Rochester, 13, N. Y. J-29

PRODUCTION SUPERVISOR—For Eastern Wax Paper Manufacturer familiar with all operations. State qualifications, age, salary. Confidential. Address Box 51-289 care Paper Trade Journal. J-29

SITUATIONS WANTED

SMALL MILL RESEARCH
Specialty paper engineer will develop new or improved products for small mill on royalty basis. Successful sales and production experience. Laboratory equipment supplied. Write Box 51-298 c/o Paper Trade Journal. J-6

CHEMICAL ENGINEER—B.S. Degree, 10 years experience in kraft pulp and paper industry. Desires position in South Central States. Address Box 51-264 care Paper Trade Journal. J-15

PLANT MANAGER—Paper and Board and their conversion; wants challenging opportunity. Highly successful in organization; administration; labor relations and high level production. Presently employed. Address Box 51-45 care Paper Trade Journal. J-29

CHEMIST—Experienced in solving mill problems, supervision of quality control on test liners, boxboards, corrugating medium and specialties. Ability well known in paper industry. Can head a laboratory staff. Willing to start at $4000. Address Box 51-303 care Paper Trade Journal. J-29

FOR SALE

FOR SALE—One Minnich Baling Press—size 54 x 28 x 72. Electrically operated, down stroke. In excellent working condition. Address Box 51-304 care Paper Trade Journal. J-15

FOR SALE—1—122" Heavy Duty Single Knife Horne Cutter, suitable for Board or Pulp. Address Box 51-275 care Paper Trade Journal. TF

RATES FOR CLEARING HOUSE ADVERTISING

HELP WANTED—10c a word. Double rate for heavy face type. Minimum charge $3.50.

SITUATIONS WANTED—10c a word, double rate for heavy face type. Minimum charge $3.50. If repeated ½ rate will be charged for each consecutive repetition.

FOR SALE—10c a word. Double rate for heavy face type. Minimum charge $3.50.

WANTED—10c a word. Double rate for heavy face type. Minimum charge $3.50.

OPPORTUNITIES—10c a word. Double rate for heavy face type. Minimum charge $3.50.

Classified advertising space may also be purchased at $5.00 per single column inch. All classified advertisements are payable in advance.

If box number is used—70 cents additional.

Address replies to advertisements appearing under Box Numbers in care of PAPER TRADE JOURNAL, 15 West 47th Street, New York 18, N. Y.

FOR SALE
60" Trim—Board Machine

5—Cylinder wet end complete with a Downingtown extractor.

3—Primary presses complete.

3—Main presses complete.
Complete dryer section of 60 dryers arranged triple deck.

2—Calender stacks—one 5 and one 7 roll.

1—M & W duplex cutter.

7—Bevel mortise gear drives and three helper drives. Complete line shaft and earings.

2—Flat screens with scrapers.

5—Beavertail fan pumps.

3—Plunger pumps.

1—Nash vacuum pump.

This machine can be inspected in operation and will be available after June 15, 1951.

SHARTLE BROTHERS MACHINE COMPANY
Middletown, Ohio

J-10

FOR SALE—Stock Super Calender takes 45" rolls suitable for glassine and embossing. Address Box 51-281 care Paper Trade Journal. J-22

FOR SALE—3—Schultz rewinders available for immediate delivery. Used—in excellent condition. Address Box 51-290 care Paper Trade Journal. J-15

SMALL KRAFT MILL for sale in the East, making light weight Kraft. Reasonably priced. Address Box 51-274 care Paper Trade Journal. J-13

FOR SALE

1—Sandusky Couch Roll—126" drilled face x 22" diameter.
1—123" 3 bowl revolving reel.

BEARINGS
72—Top and bottom Dryer Bearings 7" diameter x 12" long.
BEATERS
1—Dilts Iron Tub Laboratory Beater. Beater roll 14" diameter x 10½" face.
CALENDER STACKS
1—9 roll 68" Calender Stack.
1—3 roll pressure calender—32" x 160".
1—72" 4 roll calender stack. (Extra heavy duty).
1—54" Smoothing Calender Stack, 2 Iron Rolls, 2 Cotton Rolls.
CHEST
1—Cast Iron Stock Chest, 25' long x 6' high. (With agitator).
CHIPPER
1—96" Murray 4 knife Chipper—anti-friction bearings.
CRUSHER & HAMMERMILL
1—Murray Chip Crusher.
1—Jeffrey Hammermill.
CYLINDER MOLDS
2—30" diameter x 72" face.
1—38" diameter x 79" face.
5—30" diameter x 54" face.
1—39" diameter x 90" face.
1—49" diameter x 72" face.
4—36" diameter x 78" face.
1—30" diameter x 92" face.
1—36" diameter x 72" face.
DRIVES
1—#6½ Reeves Drive.
1—#4 Reeves Drive
1—Reliance Electric Drive, complete with 5 gear head motors.
2—#3 Reeves Drives (totally enclosed).
V-BELT DRIVE
1—21½" diameter x 7¼" face, 5 groove.
1—16½" diameter x 7¼" face, 5 groove. (With clutch).
DRYERS
1—Complete unit, consisting of 6 dryers, 36" diameter x 38" face, including frames, gears, anti-friction bearings.
7—24" diameter x 48" face.
1—48" diameter x 91" face.
3—50" diameter x 96½" face.
1—36" diameter x 143" face.
1—24" diameter x 130" face.
1—48" diameter x 79" face.
1—48" diameter x 82" face.
3—Dryers 48" diameter x 134" face.
1—24" diameter x 92½" face.
2—36" diameter x 68" face.
1—24" diameter x 49" face.
1—60" diameter x 68" face.
1—48" diameter x 68" face.
2—36" diameter x 66" face.
1—30" diameter x 61" face, complete with frames.
9—24" diameter x 60" face.
GUILLOTINE CUTTER
1—60" Cutter.
FLAT SCREENS
1—6 plate Shartle Flat Screen
7—Packer, 12 plate, roller shoe type.
FRAMES
Vertical frames for 100 dryers, 48" diameter, with bearings.
JORDANS
1—Horne Jordan.
3—Noble & Wood Mammoth.
LIME SLUDGE FILTERS
3—IMPCO Lime Sludge Filters, vacuum type, 5' diameter x 4' face.
MOTORS
Write us regarding your requirements.
PRESSES
3—Sets Primary Presses, complete, 145" face. Anti-friction bearings. Also all types of rolls for 145" wet end.
PULLEYS
Various cone and assorted pulleys
PULPERS
1—Jones Pulper. Complete with motor and drive.
1—Noble & Wood Pulper—Iron Tub
1—Lamoye Pulper.
PUMPS
Various sizes of Centrifugal and Plunger Pumps. Write us regarding your particular requirements.
4—Shartle Brothers circulating pumps, each 4,000 g.p.m.
REEL
1—123"—3 bowl Revolving Reel.
REFINERS
3—#1 Claflin Refiners.
ROLLS
Felt, Table, Press, Breast, Couch, etc. Various sizes and types. (Bronze, Rubber, Iron, etc.)
ROTARY SCREENS
1—#2 Bird Rotary Screen.
1—#2A Bird Rotary Screen.
SAVEALLS
1—#5 Bird Saveall.
2—Savealls, 30" diameter x 136" face cylinder molds, iron end vats.
SHEETERS
1—60" Moore & White Sheeter with Layboy and 9 roll backstand.
SHREDDERS
2—Daniels Rag Cutters.
SLITTERS & WINDERS
1—48" Cameron—Type 40-A-B
1—118" 2 drum Waldron
2—112" Cameron—Type 18.
1—104" Beloit two drum winder.
1—48" Cameron Constant Tension with pneumatic control.
1—42" Cameron—Type 6.
1—62" Cameron—Type 8-S.
1—62" Cameron—Type 26-SA.
1—42" Johnstone Slitter.
1—92" Moore & White 4 drum winder.
1—62" Cameron—Type 10-10.
STOCK PUMPS
1—10 x 20 Shartle Duplex.
1—7 x 16 Shartle Duplex.
1—10 x 20 Triplex, with motor.
Advise us as to your requirements
SUCTION COUCH ROLL
1—Sandusky Couch Roll 126" drilled face x 22" diameter
SUCTION BOXES
2—136" face Suction Boxes.
VACUUM PUMPS
1—N-82 Nash, for Fulton-Midwest System.
1—#4 Nash Hytor Vacuum Pump.
WET MACHINE
1—77" Rogers Wet Machine.
YANKEE DRYERS
1—48" Face x 84" Diameter, Frames & Bearings.
1—68" face x 60" diameter including frames and anti-friction bearings.

We are always in the market to purchase your surplus or idle machinery. What have you to offer?
Wanted Cylinder and Fourdrinier Machines (complete mills).

Paddy Ross, Pres. **J. J. ROSS COMPANY** Ben Kurz, Treas.
250 Frelinghuysen Ave. Tel.—Bigelow 3-3720 Newark 5, N. J

FOR SALE

Beaters

1—Jones broke beater 2000 lbs. Stainless steel bars and tub, excellent condition, now in 1943
2—75 x 55" Rabus, bronze filled
1—62 x 56", iron tub Valley Iron Wks
1—Broke beater 72 x 54", with rag catcher

Calenders (Machine)

1—114" nine roll
1—96" seven roll
1—92" nine roll
1—80" seven roll

Calenders (Super)

1—94" eleven roll Norwood with speed range 50—2000 FPM with M G set, excellent condition.
1—82" nine roll Norwood
1—72" nine Roll Holyoke
1—58" nine roll Holyoke

Cutters

1—156" Hamblet duplex
1—130" Hamblet duplex
1—100" Dillon duplex
1—84" Clark single
1—70" Clarke single

Chippers

1—84" four knife Carthage chipper

Dryers

1—12 ft. x 184" Yankee
2—8 ft. x 184"
6—5 ft. x 174"
1—5 ft. x 103" Yankee

Digester

3—14 ft. diameter Globe

Drives

1—20 HP Downingtown spiral bevel gear drive
1—30 HP Rice Barton spiral bevel gear drive

Grinders

1—100" Hanchett
1—40" grinder

Presses (Pulp)

4—Thune presses for de-watering pulp

Rolls (Press)

3—32 x 232" rubber covered
1—25 x 162"
1—26 x 236, granite

Rolls (Suction)

1—36 x 240" suction couch
1—30 x 103" suction couch
1—22 x 130" suction couch
1—18 x 142" suction couch
1—34 x 200" suction press
1—30 x 190" suction press

Screens

4—Waterous Quiller type pulp screens
2—16 plate Harmon flat screens

Slitters & Winders

1—208" Moore & White four drum winder
1—190" No. 19 Cameron
1—120" Moore & White four drum winder

Mill

1—2 Machine Mill—Capacity 25 ton Kraft

FRANK H. DAVIS COMPANY
175 Richdale Ave.
Cambridge 40, Mass.
J-15

FOR SALE

GOOD PAPER MILL EQUIPMENT

42" Cameron 26-2A Slitter, like new.
52" Cameron type 8 model 5 Slitter.
52" Inman shear cut Slitter.
42" Moore & White Sheeter with layboy.
42" Hamblet Sheeter.
58" Finley Sheeter, very reasonable.
92" Hamblet Sheeter with M & W Layboy.
100" Dillon Sheeter with 10-roll Back-Stand.
68" Oswego mill type Power Cutter.
74" Seybold 102 Auto. Power Cutter.
57" Brown & Carver Power Cutter.
73" Paper Reel.
Silver #13 Paper Shredder.
NEW "Famous" Balers, both hand & power.
NEW Hamblet Sheeters, any size.

THOMAS W. HALL COMPANY, Inc.
120 West 42nd St., New York 18.
(Plant at Stamford, Conn.) TF

FOR SALE—74" Knowlton Traveling Shear Cut-off Knife.—Bargain. Address Box 51-105 care Paper Trade Journal. TF

FOR SALE BY OWNER

Four 3A-100" Bird Screens non-ferrous construction with 24 cut bronze screen plates, front and skimming boxes, copper dam, high pressure cleaning showers and 440 volt, 3 phase, 60 cycle motors. In operation approximately two years. In excellent condition. Contact Weyerhaeuser Timber Company, Purchasing Department, P. O. Box 275, Springfield, Oregon.
J-22

FOR SALE—65" Seybold Paper Cutter; 36" Slitter & Rewinder, 48" Sheeter with Layboy; 30" Waldron 6-color Wall Paper Printing Press; 29 x 40 Thomson Platen Die Cutter; 6" Brightwood Box Machine. Address Box 51-217 care Paper Trade Journal. TF

THREE POTDEVIN SOS BAG MACHINES

Type SO/22 Size 3; Type SO/22 Size 8; Type SO/30 Size 4. Range from 1 lb. to 10 lb. inclusive.

All machines in good condition. Operating daily giving good production. Price includes gears and formers for all sizes in range.

Address Box No. 51-309 care Paper Trade Journal. J-15

For Sale: Very valuable asphalt laminating and coating machine 74" wide all electrical equipment. Immediately available. Rare opportunity. For inspection address or phone: Theo. Adams, 111 W. Washington, Randolph 6-4918. J-29

PAPER COATING MACHINERY MANUFACTURERS — Waxing, Oiling, Carbon Laboratory Coating and Treating and Flat Ream Measuring and Converting Machines. New improvement. THE MAYER MACHINE COMPANY, INC., 1313 Buffalo Road, Rochester, 11, N. Y. TF

FOR SALE

1—60" Rotary Kidder 3 color Printing Press—Prints with flash dry ink—$7500.00
1—42" Kidder Boot Cutter with 10 sheet Accumulator—$2500.00
1—52" Book Sheeter—$3000.00
1—42" Paper Rewinder—$1000.00

S. B. SEHRENS & COMPANY,
115 Cedardust Ave., Brooklyn, N. Y.
Phone EVergreen 6-0060.
J-15

FOR SALE

FOR SALE

82" LANGSTON, SHEAR CUT SLITTER AND REWINDER.

Heavy duty type "B". Takes 60" diameter mill roll and rewinds to 50" diameter. 36 cuts knives, 3" diameter collapsible rewind shaft. Reeves drive, 7½ H.P. G.E. A.C. motor equipment. A-1 condition. Immediate delivery. Address Box 51-310 care Paper Trade Journal. J-15

BOUGHT — SOLD

Soda Ash—Caustic Soda
Titaniums—Lithopone—Zinc Oxides
Glycols—Cellosolves—Ethanolamines
Bichromates—Dyes—Colors, etc.

CHEMICAL SERVICE CORPORATION
80-84 Beaver St., New York 5, N. Y.
J-15

FOR SALE

1—Westinghouse Steam Turbine, Type C, Rating 125 H.P. with 120-lb. steam, 45 lb. back pressure, 3090 R.P.M. reduced 6 to 1 with gear unit. Recently checked and serviced by Westinghouse Engineering Dept.
Contact Whitehouse Paper Co., 3100 N. Second St., Philadelphia 33, Pa.
J-15

WANTED

WILL EXCHANGE
KRAFT PULP FOR KRAFT PAPER
OR WILL BUY MACHINE TIME
40 LB. BAG PAPER PREFERRED
35 TONS PULP DAILY AVAILABLE
BOX NO. 51-285 CARE PAPER TRADE JOURNAL
TF

WANTED

2—#400 FV 36" Bauer Double Revolving Disc Pulpers, complete, and in good condition for operation on 440 volt, 3 phase, 60 cycle current.

Address Box 51-280 care Paper Trade Journal.
J-15

WANTED

Serviceable Grocery Bag Machine
8 through 20 lb. sizes.
Recent Model Potdevin preferred.

Address Box 50-450, care Paper Trade Journal. TF

USED MACHINE WANTED

For making large sizes
of open mouth, multi-wall
Satchel Bottom Sacks
with printer preferred.

Give full information as to condition, size, range & other pertinent details. Box 51-308 care Paper Trade Journal. J-15

WANTED

WANTED

2—Morden Stock Makers in good condition and complete with filling. With or without 440 volt, 3 phase, 60 cycle motors.

Address Box 51-279 care Paper Trade Journal.

J-15

SMALL PAPER MILL

In East desired as permanent investment. Plant manufacturing chemical pulps preferred.

Write Box 51-287 c/o Paper Trade Journal. J-29

WANTED—Dryers for Paper Machine about 90" to 100"; also, Flat Cutter; Sheeter. Address Box 51-283 care Paper Trade Journal. J-22

WANTED—W & P Shredders, Evaporators, Generators and Boilers, Slitters, Cutters, Hydraulic presses, Sheridan Presses, Dryers. Address Box 51-89 care Paper Trade Journal. TF

WANTED

KRAFT PAPER WANTED
CARLOADS ONLY
40 LB. BAG PAPER PREFERRED
WILL PAY SPOT CASH AND TRIM MACHINE
WILL TAKE OUTPUT OF MILL
BOX NO. 51-284 CARE PAPER TRADE JOURNAL

TF

NEWSPRINT
WANTED FOR EXPORT
MINIMUM 500 TONS
ROLLS OR SHEETS
STANDARD CANADIAN OR AMERICAN
IMMEDIATE OR EARLY SHIPMENT
BOX NO. 51-283 CARE PAPER TRADE JOURNAL.

TF

WANTED

MASTER MECHANIC for progressive board mill. Good salary, good working conditions. Address Box 51-307 care Paper Trade Journal. J-29

WILL EXCHANGE #6 Camachine 62" Shear Cut for a #6 Camachine Score Cut. Address Box 467, Camden, N. J. J-32

WANTED—42" to 60" Shear Cut Slitter. Kidder preferred. Write anyway. Address Box 51-295 care Paper Trade Journal. J-15

WANTED

WANTED—Used Centrifiners. Address Box 51-306 care Paper Trade Journal. J-15

WANTED—A good used combination slitter and rewinder, score cutting, 72" to 76" wide to rewind 30" plus. Address Box 51-305 care Paper Trade Journal. J-6

WANTED—Small Tissue Mill in the East. Address Box 51-300 care Paper Trade Journal. J-6

WANTED—Asphalt Laminating Machine to handle 36" or 48" in width. Please describe in detail—age, condition, etc. Address Box 51-302 care Paper Trade Journal. J-15

WANTED—Brightwood Box Machine, Shredders, Evaporators, Generators and Boilers, Slitters, Cutters, Hydraulic presses, Sheridan Presses, Dryers. Address Box 51-88 care Paper Trade Journal. TF

GOVERNMENT BIDS

PROPOSALS FOR THE SALE OF UNSORTED WASTE PAPER.

U. S. GOVERNMENT PRINTING OFFICE,
WASHINGTON, D. C., *June 1, 1951.*

Sealed proposals will be received at this Office until 10 o'clock a. m., E. D. S. T., June 18, 1951, for the sale of Unsorted Waste Paper which may accumulate at the Government Printing Office during the six months beginning July 1,1951. The right to reject any and all bids and to waive defects is reserved. Detailed specifications of the estimated quantities to be sold, accompanied by blank proposals and giving regulations with which bidders must comply, may be obtained by addressing

JOHN J. DEVINY,
Public Printer.

We have been asked

"Why don't you publish a short, easy reading textbook of Pulp & Paper Making."

We have—The University of Maine Lectures

Have you ordered your copy? 1200 others have.

Lockwood Trade Journal Co., Inc.

15 West 47th St. New York, 19, N. Y.

BUY

U. S. SAVING BONDS

The Trade-Mark of

Dependable Felts

The Waterbury Felt Company

SKANEATELES FALLS, N. Y.

When You Had to Stare At THE BIRDIE

The photographer stood with his head in a hood
And seemed to play hide-and-go-seek;
His clients were glum, for their bodies were numb
And their necks would be stiff for a week.
The portrait genteel was an awful ordeal
In those days of haphazard technique!

Another ordeal of those earlier days
Was washing the paper mill felt,
No wonder the backtender wasn't averse
To a nip or two under his belt.
But they always were sure to make fine finish paper
So long as the felts were all woven by Draper!

The DRAPER Felt

DRAPER BROTHERS COMPANY

Woolen Manufacturers Since 1856

CANTON, MASSACHUSETTS

WHERE TO BUY

ABRASIVES
Monsanto Chemical Co.
Nangatuck Chemical
Division of U. S. Rubber Co.
Norton Co.
Simonds Abrasive Co.

ADHESIVES
American Cyanamid Company
Plastics & Resins Division
E. I. Du Pont De Nemours & Co., Inc.
The Goodyear Tire & Rubber Company
Monsanto Chemical Co.
Merningstar, Nichol, Inc.
National Starch Products, Inc.
Napco Chemical Co.
Plaskon Division,
Libbey-Owens-Ford Glass Co.
Reichhold Chemicals, Inc.
Stein, Hall & Co., Inc.

AGITATORS
American Paper Machy. & Engrg. Works, Inc.
Appleton Machine Co.
Dilts Machine Works, Inc.
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
D. J. Murray Mfg. Co.
Moore & White Co.
The Sandy Hill Iron & Brass Works
Valley Iron Works Co.
Shartle Brothers Machine Co.

ADJUSTABLE SHAKE MOTION
Manchester Machine Co.

ADJUSTABLE TILTING MOTOR BASE
Lovejoy Flexible Coupling Co.

ALLOYS
Michigan Steel Casting Co.

ANTIFOAM
American Cyanamid Company
Industrial Chemicals Division
National Aluminate Corp.
Napco Chemical Co.

APRON CLOTH
Williams-Gray Co.

BAG MACHINES
Dilts Machine Works
Potdevin Machine Co.

BALL MILLS
F. L. Smidth & Co.

BARK BURNER
Combustion Engineering-Superheater, Inc.
Hoffl Company, Inc.
Nichols Engrg. & Research Corp.

BARKERS AND CHIPPERS
Allis-Chalmers Mfg. Co.
Appleton Machine Co.
Carthage Machine Co.
D. J. Murray Mfg. Co
Valley Iron Works Co.

BARS
Dilts Machine Works
E. D. Jones & Sons Co.
The Moore & White Co.
Shartle Brothers Machine Co
Valley Iron Works Co.

BASIC WEIGHT SCALES
Thwing-Albert Instrument Co

BEARINGS
The Bagley & Sewall Company
Black Clawson Company
E. D Jones & Sons Co.
Magnus Metal Corp.
The Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
SKF Industries
Stephens-Adamson Mfg. Co.
Timken Roller Bearing Co.
Valley Iron Works Co.

BEATERS AND JORDANS
American Paper Machy. & Engrg. Works, Inc.
The Appleton Machine Co
Black Clawson Company
Dilts Machine Works
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Morden Machines Co.
J. J. Ross Company
Ross Paper Machy. Co.
Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co
Smith & Winchester Mfg. Co
Valley Iron Works Co.

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Dilts Machine Works, Inc.
Downingtown Mfg. Co.
Farrel-Birmingham Co., Inc.
E. D. Jones & Sons Co.
Lukenweld Div., Lukens Steel Co.
Shartle Brothers Machine Co.
Valley Iron Works Co.

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Allis-Chalmers Mfg. Co.
Goodrich, B. F., Co.
The Goodyear Tire & Rubber Company
Link Belt Company

BIN DISCHARGERS
Hoffl Company, Inc.
Stephens-Adamson Mfg. Co.

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General Dyestuff Corp.
Rohm & Haas Co.
Virginia Smelting Co.

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E. D. Jones & Sons Co.
Perkins & Sons, Inc., B. F.
Moore & White Co.
Niagara Alkali Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

BLOW PIPES & PITS
Carthage Machine Co.
Kalamazoo Tank & Silo Co.
Moore & White Co.
Murray Mfg. Co., D. J.
Walworth Company

BOILERS
Babcock & Wilcox Co.
Combustion Engineering-Superheater, Inc.

BOTTOMS
Kalamazoo Tank & Silo Co.
Valley Iron Works Co.

BOXBOARD SCALES
Thwing-Albert Instrument Co.

BRUSH ROLLS
M. W. Jenkins Sons, Inc.
Gus Riedel & Son

BRUSHES
M. W. Jenkins Sons, Inc.
Gus Riedel & Son
The Sandy Hill Iron & Brass Works
Smith Winchester Mfg. Co.
Weber, Herman G., & Co., Inc.

BURSTING TESTERS
B. F. Perkins & Son Inc
Testing Machines, Inc.

CALENDERS
The Bagley & Sewall Company
Beloit Iron Works
Black Clawson Company
Downingtown Mfg. Co.
Farrel-Birmingham Co., Inc
Lobdell United Co.
Edward J. McBride
The Moore & White Co.
Perkins & Sons, Inc., B. F.
J. J. Ross Company
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co
Smith & Winchester Mfg. Co
Valley Iron Works Co
Waldron Corp., John

CARRIER ROPE
Williams-Gray Co

CASEIN
American Cyanamid Co
Industrial Chem. Div.
Bunge Pulp & Paper Co
Hercules Powder Co

CASTINGS
Appleton Machine Co.
The Bagley & Sewall Company
Black Clawson Company
Babcock & Wilcox Co.
Carthage Machine Co.
Dilts Machine Works
Downingtown Mfg. Co
Farrel-Birmingham Co
Hamblett Machine Co.
Lobdell United Co.
Magnus Metal Corp.
Michigan Steel Casting Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.
Walworth Company

CENTRIFUGAL MACHINERY
Bird Machine Co.
Nichols Engrg. & Research Corp.
Ross, J. O., Engrg. Co.
Shartle Brothers Machine Co.

CHAINS
Stephens-Adamson Mfg. Co.

CHEMICAL COTTON PULP
Hercules Powder Co.

CHEMICALS

American Cyanamid Co., Industrial Chem. Div.
Ansul Chemical Co.
Bunge Pulp & Paper Co.
Calco Chemical Co.
Celanese, Inc.
Diamond Alkali Co.
Dow Chemical Company
E. I. du Pont de Nemours & Co., Inc.
General Dyestuffs Corp.
Geigy Co., Inc.
B. F. Goodrich Chemical Co.
Gottesman & Co.
Hercules Powder Co.
Hooker Electrochemical Co.
The Kinsley Chemical Company
Monsanto Chemical Company
National Aluminate Corp.
Naugatuck Chemical Division of U. S. Rubber Co.
Niagara Alkali Company
Nopco Chemical Co.
Pittsburgh Plate Glass Co., Columbia Chemical Division
Reichhold Chemicals, Inc.
Rohm & Haas Co.
Virginia Smelting Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

CHESTS

The Bagley & Sewall Company
E. D. Jones & Sons Co.
Kalamazoo Tank & Silo Co.
Shartle Bros. Mch. Co.

CLEANING MATERIALS

American Cyanamid Company Industrial Chemicals Division
The Dow Chemical Company
E. I. du Pont de Nemours & Co., Inc.
General Dyestuff Corp.
Monsanto Chemical Company
Nopco Chemical Co.
Pittsburgh Plate Glass Co
Wyandotte Chemicals Corp., J. B. Ford Division

CLUTCHES

Appleton Machine Co.
The Bagley & Sewall Company
Black Clawson Company
Farrel-Birmingham Co.
Moore & White Co.
D. J. Murray Mfg. Co.
The Sandy Hill Iron & Brass Works
Shartle Bros. Mch. Co.
Stephens-Adamson Mfg. Co.

COATING MACHINERY

Dilts Machine Works
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
The Mayer Machine Co., Inc.
Moore & White Co.
Pondevin Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corporation, John Weber, Herman G., & Co., Inc.

COATING MATERIALS

American Cyanamid Company Industrial Chemicals Division
E. I. Du Pont De Nemours & Co., Inc.
B. F. Goodrich Chemical Co.
The Goodyear Tire & Rubber Company
Hercules Powder Co.
J. M. Huber Corp.
Monsanto Chemical Company
Naugatuck Chemical Division of U. S. Rubber Co.
Nopco Chemical Co.
Plaskon Division, Libbey-Owens-Ford Glass Co.
Reichhold Chemicals, Inc.
Wyandotte Chemicals Corp., Michigan Alkali Div.

COGS

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COMPLETE FOURDRINIER ROLL GRINDING

Manchester Machine Co.

COMPRESSORS

Allis-Chalmers Mfg. Co.
Nash Engineering Co.
Roots-Connersville Blower Corp.

CONDENSATE FILTERS

Hungerford & Terry, Inc.
The Permutit Company

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Bird Machine Company
DeZurik Shower Company
Paper & Industrial Appliances

CONSTRUCTION CONTRACTORS

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Wirk, F. Paul
Black Clawson Company
Dilts Machine Works
Ebasco Services
Frank W. Egan & Co.
Alvin E. Johnson & Co., Inc.
Main, Inc., Chas. T.
The Rust Engrg. Co.
Shartle Bros. Mch. Co.
J. E. Sirrine & Co.
Frank C. Vaughan
John Waldron Corp.
H. G. Weber & Co., Inc.

CONTINUOUS DIGESTER

Paper & Industrial Appliances

CONTROLLERS

Black Clawson Company
The Brown Instrument Co.

CONTROLS

The Brown Instrument Co.
Johnson Corp.
Foxboro Control Co.
Shartle Bros. Mch. Co.
Stickle Steam Specialties Co.

CONVERTING MACHINERY

The Bagley & Sewall Company
Egan, Frank W., & Co.
John Waldron Corp.
Dilts Machine Works

CONVEYORS

Black Clawson Company
Murray, D. J., Mfg. Co.
Ross Engineering Corp., J.
Shartle Brothers Mch. Co.
Stephens-Adamson Mfg. Co.

CORES

Elixman Paper Co.
Smith & Winchester Mfg. Co.
Sonoco Products Co.

CORROSION RESISTANT

Amercoat Corporation

COTTON LINTER

Alpha Cellulose Corp.
Railway Supply & Mfg. Co.

COTTON PULP

Alpha Cellulose Corp.

COUCH ROLLS

Beloit Iron Works

COUPLINGS

The Bagley & Sewall Company
Black Clawson Company
Farrel-Birmingham Co., Inc.
E. D. Jones & Sons Co.
Lovejoy Flexible Coupling Co.
Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works
Waldron Corp., John

CRANES

Cleveland Crane & Engrg. Co.
Whiting Corp.

CURL TESTER

Thwing-Albert Instrument Co.

CUTTERS

The Bagley & Sewall Company
Beloit Iron Works
Black Clawson Company
Dilts Machine Works
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Harris-Seybold Co.
Jagenberg-Werke Akt. Ges.
Moore & White Co.
Perkins & Son, Inc., B. F.
The Sandy Hill Iron & Brass
Taylor, Stiles & Co.
Works
The Smith & Winchester Mfg. Co.

CYLINDER MOULDS

Manchester Machine Co.

CYLINDERS

M. W. Jenkins Sons, Inc.

DAMPENERS

Perkins & Son, Inc., B. F.
Valley Iron Works Co.

DECKLE WEBBING

Williams-Gray Co.

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Hungerford & Terry, Inc.
The Permutit Company

DEMULSIFIERS
Wyandotte Chemicals Corp., Michigan Alkali Div.

DENSOMETERS
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W. & L. E. Gurley

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Ebasco Services

DETERGENTS
American Cyanamid Company Industrial Chemicals Division
Calgon, Inc.
General Dyestuff Corp.
Monsanto Chemical Company
Nopco Chemical Co.
Rohm & Haas Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

DEWAXING CHEMICALS
American Cyanamid Company Industrial Chemicals Division
General Dyestuff Corp.
Nopco Chemical Co.

DIFFERENTIAL SCALES
Thwing-Albert Instrument Co

DIGESTERS
Babcock & Wilcox Co.
Blaw Knox Company
Chicago Bridge & Iron Co.
Combustion Engineering-Superheater, Inc.
Lukenweld
Paper & Industrial Appliances
Pusey & Jones Corp.

DISPERSING AGENTS
Calgon, Inc.
General Dyestuff Corp.
Monsanto Chemical Company
National Aluminate Corp.
Nopco Chemical Co.
Rohm & Haas Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

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Bird Machine Company
Black Clawson Company
Downingtown Mfg. Co.
Lobdell United Co.
Lodding Engineering Corp.
The Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

DOCTOR BLADES
The Bagley & Sewall Company
Bird Machine Company
Lodding Engrg. Corp.
The Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co
Simonds Saw & Steel Co.

DRIERS
The Bagley & Sewall Company
Black Clawson Company
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
Lukenweld
The Moore & White Co.
Murray Mfg. Co., D. J.
I. J. Ross Company
Red-Ray Mfg. Co., Inc.
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.

DRILLED SUCTION COUCH ROLLS
Manchester Machine Co.

DRILLED SUCTION DRUM ROLLS
Manchester Machine Co.

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Appleton Machine Co.
The Bagley & Sewall Company
Beloit Iron Works
Bird Machine Co.
Black Clawson Company
Dilts Machine Works
Downingtown Mfg. Co.
Fairbanks, Morse & Co.
Farrel-Birmingham Co.
General Electric Company
Gibbs-Brower Company, Inc.
Moore & White Co.
Murray, D. J., Mfg. Co.
Pusey & Jones Corp.
I. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Bros. Mch. Co.
Stephens-Adamson Mfg. Co.
Valley Iron Works Co.
Westinghouse Electric Corp.

DRUM WINDERS
Manchester Machine Co.

DRYER DRAINAGE
Stickle Steam Specialties Co.

DRYER ROLL PYROMETER
Thwing-Albert Instrument Co

DUSTERS
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Downingtown Mfg. Co.
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M. W. Jenkins Sons, Inc.
E. D. Jones & Son Co.
Moore & White Co.
D. J. Murray Mfg. Co.
John Waldron Corp.

DUSTING BRUSHES
M. W. Jenkins Sons, Inc.

DYESTUFFS
American Cyanamid Company Calco Chemical Div.
Bunge Pulp & Paper Co.
Ciba Company
E. I. du Pont de Nemours & Co., Inc.
Geigy Co., The
General Dyestuffs Corp.
National Aniline Division, Allied Chemical & Dye Corp.

ELECTRIC HYGROMETER
Thwing-Albert Instrument Co

EMBOSSING MACHINES
Dilts Machine Works
Egan, Frank W., & Co.
John Waldron Corp.

EMBOSSING ROLLS
The Appleton Machine Co
Gibbs-Brower Company, Inc.
Holyoke Machine Co.
Northern Engraving & Mch Co.
B. F. Perkins & Son, Inc.
John Waldron Corp.
Wheeler Roll Co.

EMULSIFIERS
General Dyestuff Corp.
Nopco Chemical Co.
Rohm & Haas Co.
Wyandotte Chemicals Corp

ENZYMES
Rohm & Haas Co.
Vanderbilt Co., R. T.

EVAPORATORS
Davis Engrg. Corp.
Geolin-Birmingham Mfg Co. Inc.
Murray, D. J., Mfg. Co.
Swenson Evaporator Co., Div of Whiting Corp.

EXPANDERS
Mount Hope Machinery Co

FANS
General Electric Co.
B. F. Perkins & Son, Inc.
Ross Engineering Co., J. O

FEEDERS
Hoeft Company, Inc.
Merrick Scale Mfg. Co.
The Permutit Company
Stephens-Adamson Mfg. Co.

FELTS
Appleton Woolen Mills
Asten-Hill Mfg. Co.
Draper Bros. Corp.
Huyck & Son, F. C.
Lockport Felt Co.
Morey Paper Mill Supply Co.
Shuler & Benninghofen
Waterbury Felt Co.
Waterbury, H., & Sons Co
Williams-Gray Co.

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Calgon, Inc.
General Dyestuff Corp.
Nopco Chemical Co.

FELT CONDITIONERS
Bird Machine Co.
The Sandy Hill Iron & Brass Works

FELT GUIDES
Black Clawson Company
Frank W. Egan & Co.
Gilbert & Nash Co.
Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co
Waldron Corp., John

FILLERS
American Cyanamid Company, Industrial Chemicals Division
A. M. Meincke & Son, Inc.
Vanderbilt Co., R. T.
Wyandotte Chemicals Corp., Michigan Alkali Div.

FILTERS
Bird Machine Company
Holyoke Machine Co.
J. M. Huber Corp.
Hungerford & Terry, Inc.
Johnson Corp.
Moore & White Co.
L. O. Ross Engrg. Corp.
The Sandy Hill Iron & Brass Works
Walworth Company

FITTINGS
The Bagley & Sewall Company
Crane Company
Shartle Bros. Mch. Co.
Walworth Company

FLEXIBLE COUPLINGS
Egan, Frank W., & Co.
Lovejoy Flexible Coupling Co.
John Waldron Corp.

FLOORING, GRATING AND TREADS
The Goodyear Tire & Rubber Company
Norton Co.

FLOW BOXES, STAINLESS-CLAD
Lukens Steel Co.
The Sandy Hill Iron & Brass Works

FORK LIFT TRUCKS
Clark Equipment Company Industrial Truck Division
Elwell Parker Elec. Co.
Towmotor Corp.

FORMATION TESTERS
Thwing-Albert Instrument Co.
Williams Apparatus Co., Inc.

FOURDRINIERS
Beloit Iron Works
Black Clawson Company
Downingtown Mfg. Co.
The Moore & White Co.
Rohde & Wood Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

FREENESS TESTERS
Testing Machines, Inc.
Williams Apparatus Co.

FURNACES
Hoft Company, Inc.

GASKETS
The Goodyear Tire & Rubber Company

GEARS
The Bagley & Sewall Company
Black Clawson Company
De Laval Steam Turbine Co.
Downingtown Mfg. Co.
Frank W. Egan & Co.
Farrel-Birmingham Co.
E. D. Jones & Sons Co.
Moore & White Co.
D. J. Murray Mfg. Co.
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Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.
Westinghouse Electric Corp.
Western Gear Works

GRAPPLES
Blaw-Knox Company

GRAVITY FILTERS
Holyoke Machine Co.

GRINDERS
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Farrel-Birmingham Co.
Gibbs-Brower Company, Inc.
Lobdell United Co.
Norton Company
Samuel C. Rogers and Company
The Sandy Hill Iron & Brass Works

GRINDING WHEELS
Norton Company
Simonds Abrasive Co.

GUIDES
The Bagley & Sewall Company
Egan, Frank W., & Co.
Gilbert & Nash Co.
The Moore & White Co.
Mount Hope Machinery Co.
John Waldron Corp.

GUMMING MACHINES
Ditts Machine Works
Egan, Frank W., & Co.
The Sandy Hill Iron & Brass Works

GUMS
National Starch Products, Inc.
Stein-Hall Co., Inc.

HEAT EXCHANGERS AND RECOVERY SYSTEMS
Stickle Steam Specialties Co.
Westinghouse Electric Corp.

HEATING, VENTILATING & AIR CONDITIONING
The Appleton Machine Co.
E. D. Jones & Sons Co.
General Electric Co.
D. J. Murray Mfg. Co.
Red-Ray Mfg. Co., Inc.
Ross Engineering Corp., L. O.
Stickle Steam Specialties Co.
Valley Iron Works Co.

HOSE (Air, Water, Suction, etc.)
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HUMECTANTS
Ahlstrom Division, Heyden Chemical Corp.
Nopco Chemical Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

IMPREGNANTS
American Cyanamid Company, Industrial Chemicals Division
B. F. Goodrich Chemical Co.

INDENTING MACHINES
Ditts Machine Works

INDUSTRIAL TRACTORS
Clark Equipment Company Industrial Truck Division
Towmotor Corp.

INKOMETER
Thwing-Albert Instrument Co.

INSTRUMENTS, TESTING AND MEASURING
Brown Instrument Co.
Bunge Pulp & Paper Co.
Cambridge Instrument Co.
General Electric Company
W. & L. E. Gurley
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Photovolt Corp.
Taylor Instrument Cos.
Testing Machines, Inc.
Thwing-Albert Instrument Co
Williams Apparatus Co.

JOINTS
The Bagley & Sewall Company
Beloit Iron Works
Johnson Corp.
Lovejoy Flexible Coupling Co.
Shartle Bros. Mch. Co.

JORDAN FILLINGS
Appleton Machine Co.
Bahr Brothers Mfg. Co.
E. D. Jones & Sons Co.
Shartle Bros. Mch. Co.
Smith & Winchester Mfg. Co
Valley Iron Works Co.

KNIVES
Black Clawson Company
Ditts Machine Works, Inc.
Hamblet Machine Co.
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E. D. Jones & Sons Co.
The Moore & White Co.
Simonds Saw & Steel Co.
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LABORATORY EQUIPMENT
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Bird Machine Company
Ditts Machine Works
W. & L. E. Gurley
Egan, Frank W., & Co.
E. D. Jones & Sons Co.
Taylor Instrument Companies
Testing Machines, Inc.
Valley Iron Works Co.
John Waldron Corp.
Williams Apparatus Co., Inc.

LAMINATING MACHINES
The Bagley & Sewall Company
Ditts Machine Works
Egan, Frank W., & Co.
John Waldron Corp.

LAY BOYS
Ditts Machine Works
Gibbs-Brower Company, Inc.
Hamblet Machine Co.
Moore & White Co.

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Three sets of samples are included in the treatise bearing the above title. The tabs are actual samples of products made in pulp and paper plants.

Seven samples in one set are products resulting from disk-milled knotter and fine screen rejects.

Five samples in another set are swatches made from sulphite pulp refined in disk mills for newsprint.

Eight samples in the third set are swatches of paper made from disk-refined screened sulphite.

Not only are the samples interesting in themselves, but they are illustrative of data on freeness, mullen test, tear test, power consumption, and tonnage capacity. Information on high-yield sulphite pulp is also included.

Now, of course, there's considerable work connected with collating "The Bauer Story on Sulphite." So we don't wish to send copies out to people who are merely curious; but we'll be glad to send a copy, upon request, to anyone who is actively engaged in the production of sulphite pulp or paper. Be sure to ask for a copy if you qualify.

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Bagley & Sewall Co.
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Lukenweld
Moore & White Co.
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Ross Paper Machy. Corp.
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Shartle Brothers Machine Co
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Langston Co., Samuel M.

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Moore & Munger
Sun Oil Company

PARAFFIN WAX EMULSIONS
Nopco Chemical Co.

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Beloit Iron Works
Black Clawson Company
Dilts Machine Wks.
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Murray, D. J., Mfg. Co.
Moore & White Co.
Potdevin Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corp., John

PEBBLE MILLS
F. L. Smidth & Co.

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pH METERS
Cambridge Instrument Co.
Tinwing-Albert Instrument Co.

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Babcock & Wilcox Co.
Crane Company
Grinnell Company
Michigan Steel Casting Co.
National Tube Co.
Walworth Company

PIPE FITTINGS
Armco Drainage & Metal Products, Inc.
Crane Company
Grinnell Company
Michigan Steel Casting Co.
Walworth Co.

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Industrial Chemicals Division
General Dyestuff Corp.
Monsanto Chemical Company
National Aluminate Corp.
Nopco Chemical Co.
Rohm & Haas Co.

PLASTICIZERS
American Cyanamid Company
Industrial Chemicals Division
Aktivin Division, Heyden Chemical Corp.
B. F. Goodrich Chemical Co.
Naugatuck Chemical
Division of U. S. Rubber Co.
Nopco Chemical Co.

PLATERS
Gibbs-Brower Company, Inc.
Perkins & Son, Inc., B. F.

PLATES
Armco Steel Corp.
Babcock & Wilcox Co.
J. O. Ross Engrg. Corp.
Lukenweld Division
Lukens Steel Company
Timken Roller Bearing Co

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Black Clawson Company
E. D. Jones & Sons Co.
Shartle Brothers Machine Co.

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Manchester Machine Co.

PRECISION SAMPLE CUTTER
Testing Machines, Inc.
Tinwing-Albert Instrument Co.

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General Dyestuff Corp.

PRESS ROLLS
Beloit Iron Works

PRESSURE FILTERS
Holyoke Machine Co.

PRESSURE VESSELS
Chicago Bridge & Iron Co.
Combustion Engineering-Superheater, Inc.

PRESSES
Black Clawson Company
Dietz Machine Works
Farrel-Birmingham Co.
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
The Moore & White Co.
Potdevin Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.
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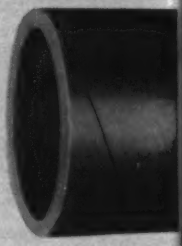

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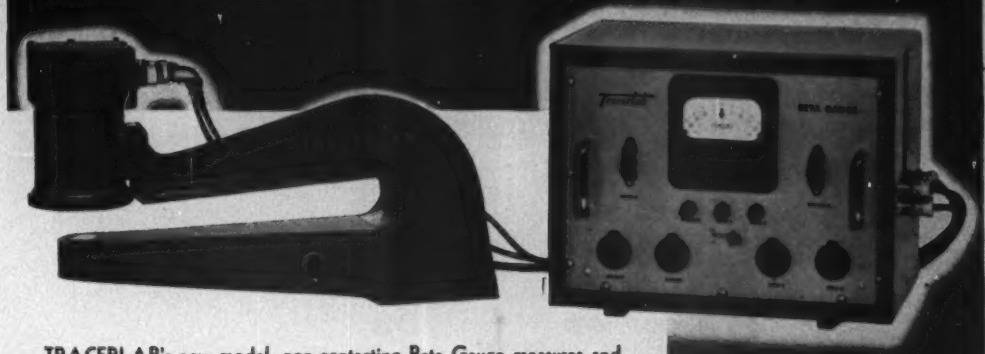

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